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# MANAGEMENT

A CONTINUING LITERATURE SURVEY

— With Indexes —

MARCH 1976

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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# MANAGEMENT

## A CONTINUING LITERATURE SURVEY

— With Indexes —

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA Scientific and Technical Information System during 1975.



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# **INTRODUCTION**

## **COVERAGE**

*Management* is a compilation of references to selected reports, journal articles, and other documents on the subject of management. This publication lists 368 documents originally announced in the 1975 issues of *Scientific and Technical Aerospace Reports (STAR)* or *International Aerospace Abstracts (IAA)*.

## **SCOPE**

This publication series includes references on the management of: research and development, contracts, production, logistics, personnel, safety, reliability and quality control. It also includes references on: program, project and systems management; management policy, philosophy, tools, and techniques; decisionmaking processes for managers; technology assessment; management of urban problems; and information for managers on Federal resources, expenditures, financing, and budgeting.

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Each entry in this bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Following the abstract sections, three indexes are included; subject, personal author, and corporate source.

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All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies are available at \$5.00 per document up to a maximum of 20 pages. The charge for each additional page is 25 cents. Microfiche are available at the rate of \$1.50 per microfiche for documents identified by the # symbol following the accession number. A number of publications, because of their special characteristics, are available only for reference in the AIAA Technical Information Service Library. Minimum airmail postage to foreign countries is \$1.00. Please refer to the accession number, e.g. (A75-10598), when requesting publications.

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## **GENERAL AVAILABILITY**

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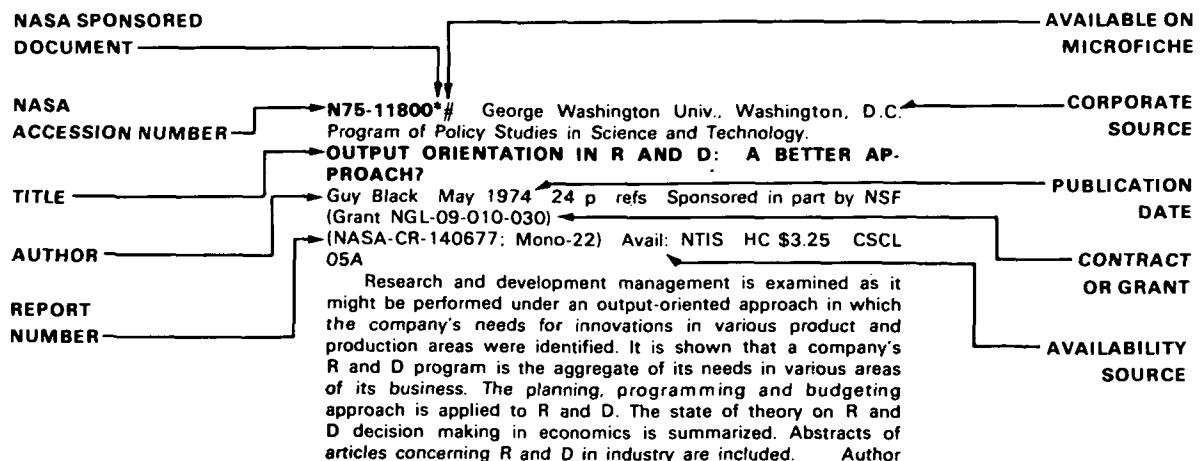
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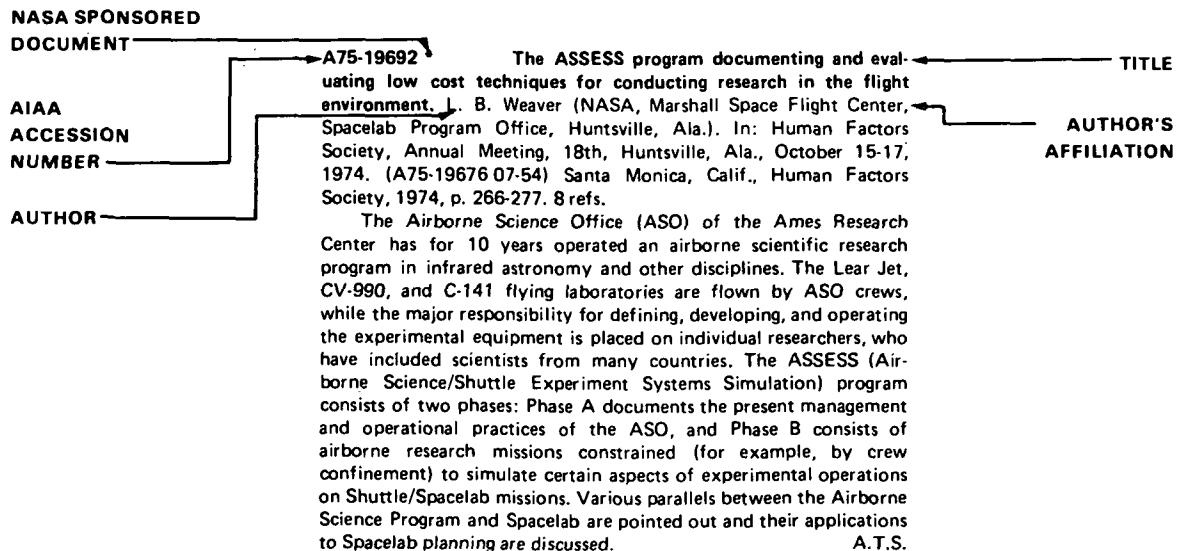
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## TYPICAL CITATION AND ABSTRACT FROM STAR



## TYPICAL CITATION AND ABSTRACT FROM IAA



# MANAGEMENT

*a continuing literature survey*

## IAA ENTRIES

A75-10598 # Looking before you leap - The state of the art of technology assessment. H. Fox (New York Institute of Technology, New York, N.Y.). *Astronautics and Aeronautics*, vol. 12, Nov. 1974, p. 40-47. 19 refs.

'Look before you leap' means the thorough and balanced analysis of all significant primary, secondary, indirect, and delayed consequences of technological innovation on society. Such analyses are being conducted by the Office of Technology Assessment (OTA) to help Congress to discern the impact of technological change on the vitality of the economic and social aspects of life. Similar technology assessment (TA) organizations are connected with a number of state governments and with the governments of foreign countries. TAS are also conducted by the Technology Assessment Panel formed by the Engineers Joint Council in November 1972. The various types of TA studies are considered. Examples of specific TAS are discussed, giving attention to the effects of the TA on the further development of the specific technology innovation being investigated.

G.R.

A75-10789 \* # Seven dangers of designer overspecialization. G. N. Sandor (Rensselaer Polytechnic Institute, Troy, N.Y.). *Mechanical Engineering*, vol. 96, Oct. 1974, p. 23-28. Grant No. NGL-33-018-091.

Seven dangers of overspecialization as they apply to the design process are analyzed. They are: missing the real need, formulation of the wrong problem, wrong design concept, wrong hardware, wrong model, over- or underanalysis and poor presentation. As an example, the design of an unmanned Rover for a mission to Mars is studied with the conclusion reached that, specialization, although necessary, should not shut out all other aspects of design or other disciplines.

T.S.

A75-11111 # A policy study of subsidized air service. W. M. Swan (MIT, Cambridge, Mass.). *Canadian Aeronautics and Space Institute and American Institute of Aeronautics and Astronautics, Joint Meeting, Toronto, Canada, Oct. 30, 31, 1974, AIAA Paper 74-1274*. 6 p. 8 refs.

A fleet assignment model which uses linear programming to maximize the cash income of an airline system is used to study the alternatives in providing air services in low density markets. Issues examined are: cost of using larger aircraft vs small turboprops; cost advantages of including the services in a larger network vs serving them independently; fuel costs in low-density vs high-density markets.

(Author)

A75-11697 # AEROSAT system study - An example of work sharing. C. Skenderoff (Thomson-CSF, Vélizy Villacoublay, Yvelines, France). *(European Space Symposium on International Collaboration in Space, 13th, London, England, June 25-27, 1973)*.

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*British Interplanetary Society, Journal*, vol. 27, Nov. 1974, p. 827-832. Translation.

An example is given of the work sharing for a study of a satellite system developed by U.S. and European manufacturers. The paper is concerned with an AEROSAT satellite study undertaken during 1972 under an ESRO contract. It shows the approach selected and the reasons behind this particular approach. The objective of the system is to formulate communication links between the traffic control centers and aircraft operating over the Atlantic and Pacific oceans. In addition, it concerns the evaluation of the system performance regarding location as a navigation aid. The system comprises 2 geostationary satellites, transmitting and receiving stations, satellite control stations, and calibration equipment. F.R.L.

A75-12030 \* # Planning and management of science programs on Skylab. R. A. R. Parker and J. R. Sevier (NASA, Johnson Space Center, Houston, Tex.). *American Institute of Aeronautics and Astronautics and American Geophysical Union, Conference on Scientific Experiments of Skylab, Huntsville, Ala., Oct. 30-Nov. 1, 1974, AIAA Paper 74-1215*. 6 p.

Discussion of the experience gained in experiment operation planning during the Skylab mission. The Skylab flight planning activity allowed the experimenters to interact with the system and provided the flexibility to respond to contingencies both major and minor. Both these aspects contributed to make efficient use of crew time thus helping to increase the science return from the mission. Examples of the need for real time scheduling response and of the tradeoffs considered between conflicting experiment requirements are presented. General management principles derived from this experience are developed. The Skylab mission experiences, together with previous Apollo mission experiences, are shown to provide a good background for Shuttle flight planning.

M.V.E.

A75-12080 # Dynamic model of interacting economic entities. T. K. Sirazetdinov and S. K. Dzhaksybaev. *(Aviatsionnaya Tekhnika*, vol. 17, no. 1, 1974, p. 25-30.) *Soviet Aeronautics*, vol. 17, no. 1, 1974, p. 19-23. Translation.

A mathematical description is given for a production process performed by an industrial system consisting of n interacting units with set input and output characteristics. Expressions are derived to interrelate the output capacity, the total amount of input resources, the total working capital expenditure and the product output per unit time in one component unit of a multiunit industrial or commercial system. Particular attention is given to a mathematical model of the development of a two-unit commercial production system. The mathematical problem involved is reduced to the solution of the Cauchy problem of a system of ordinary differential equations.

V.Z.

A75-12245 # Man as manager of automated resources in an advanced air traffic system. L. L. Jenney (Planar Corp., Alexandria, Va.) and R. S. Ratner (Stanford Research Institute, Menlo Park, Calif.). *AIAA, DOT, and NASA, Life Sciences and Systems Conference, Arlington, Tex., Nov. 6-8, 1974, AIAA Paper 74-1293*. 10 p. 6 refs.

Questions are explored concerning the nature of man's participation in a future ATC system in which much of the routine operation has been delegated to machine resources. In future ATC systems the degree of man's direct involvement with individual aircraft will be greatly diminished, and his concerns will shift towards information

## A75-12246

management and process control. The operational role of man in current and future systems is discussed along with his managerial role and questions of reliability and performance assurance. G.R.

**A75-12246 \*** # **Avionics systems in the management of air transportation.** B. K. Berkstresser (NASA, Aeronautical Operating Systems Office, Washington, D.C.). *AIAA, DOT, and NASA, Life Sciences and Systems Conference, Arlington, Tex., Nov. 6-8, 1974, AIAA Paper 74-1294.* 8 p. 5 refs.

Aspects of aircraft operating systems technology are discussed along with the requirements of the National Airspace System and the system requirements for transport and light aircraft. Attention is given to problems regarding man's role as systems become increasingly complex. It is pointed out that science does not know enough concerning the operation of the human body to provide information for an optimal exploitation of man's unique capabilities as manager of his aircraft. G.R.

**A75-12333 # The economical effectiveness of new technology in the fabrication of electronic equipment (Ekonomicheskaiia effektivnost' novoi tekhniki v elektronnom priborostroenii).** V. I. Pavlovets. Moscow, Izdatel'stvo Sovetskoe Radio, 1974. 200 p. 62 refs. In Russian.

Mathematical techniques are employed for analyzing the potential effectiveness of creating and introducing new technology for the mechanization and automation of production methods in the electronics industry. The analysis also includes the automation of project management and product quality control. The steps in the process of planning, researching, implementing, and evaluating new production techniques are set forth. P.T.H.

**A75-12899 The impact of technology assessment on industry.** D. M. Kiefer. (*American Chemical Society, National Meeting, Los Angeles, Calif., Mar. 31-Apr. 5, 1974.*) *Research Management*, vol. 17, Nov. 1974, p. 11-15.

The objectives of technology assessment (TA) are examined. The goals of TA are not restricted to an evaluation of the direct, immediate, or primary effects of technological change. TA, in addition, is to scrutinize the interaction, side or secondary effects, and trade-offs among several simultaneously evolving technologies, or between a technological change and society. Questions concerning the practical effects and implications of TA are investigated, giving attention to the apparent inability of TA to have an overriding impact on many individual decisions and to apprehensions that TA might impede technological progress. It is recommended that industry should have an assessment capability of its own as an aid for guiding its technological activities in such a way that they will be acceptable on the basis of economic, political, and social considerations. G.R.

**A75-12900 The role of technology transfer in innovation.** S. Gee (U.S. Navy, Naval Ordnance Laboratory, Silver Spring, Md.). *Research Management*, vol. 17, Nov. 1974, p. 31-36. 11 refs.

The meaning of the terms 'technological innovation' and 'technology transfer' is examined, giving attention also to factors which determine the success of an innovation and the length of the innovative time period. The part played by technology transfer in the development of a technological device is illustrated with the aid of specific examples. G.R.

**A75-13635 Low cost management for Spacelab.** H. Stoewer (ESRO, European Space Research and Technology Centre, Noordwijk, Netherlands). *International Astronautical Federation, International Astronautical Congress, 25th, Amsterdam, Netherlands, Sept. 30-Oct. 5, 1974, Paper A74-06.* 11 p.

Management methods used in the Spacelab project have the goal of ensuring long term low cost to all program participants. The development has a preset funding limitation, while maximizing user services and minimizing cost for the operations phase. Provisions for contingency planning, the roles of the customer and contractor,

management control of key parameters for low cost, and the award fee system used to motivate contractors are discussed. A.T.S.

**A75-13645 # The new European Space Agency (La nouvelle Agence Spatiale Européenne).** H. Kaltenegger (ESRO, Neuilly-sur-Seine, Hauts-de-Seine, France). *International Astronautical Federation, International Astronautical Congress, 25th, Amsterdam, Netherlands, Sept. 30-Oct. 5, 1974, Paper SL74-11.* 15 p. In French.

The European Space Agency (ESA) will conduct and coordinate a common European space program, broadening and making more flexible the programs of ESRO and ELDO, which it will replace. The ESA Convention pays special attention to cooperation on applications satellites. The institutional structure of the Agency, including the Convention, the principal Council, program councils, and the office of Director General, are discussed. Functioning of the ESA with respect to resource allocation, installations and services, industrial policy, and internationalization of national programs is considered. The ESA will have legal personality. Arbitration of disputes is envisioned. A.T.S.

**A75-16610 Management and design of long-life systems; Proceedings of the Symposium, Denver, Colo., April 24-26, 1973.** Symposium sponsored by the American Astronautical Society. Edited by H. M. Schurmeier (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). Tarzana, Calif., American Astronautical Society (Science and Technology Series, Volume 34), 1974. 197 p. \$16.

The long life of Pioneer interplanetary spacecraft is considered along with a general accelerated methodology for long-life mechanical components, dependable long-lived household appliances, and the design and development philosophy to achieve reliability and long life in large turbine generators. Other topics discussed include an integrated management approach to long life in space, artificial heart reliability factors, and architectural concepts and redundancy techniques in fault-tolerant computers. G.R.

**A75-16613 Integrated management approach to long life in space.** E. Schaeffer (Schaeffer Magnetics, Inc., Chatsworth, Calif.). In: *Management and design of long-life systems; Proceedings of the Symposium, Denver, Colo., April 24-26, 1973.* Tarzana, Calif., American Astronautical Society, 1974, p. 67-77.

The concept of long-life systems in the space environment cannot be dealt with only from the viewpoint of better lubricants, materials, etc. This paper proposes to set aside the handbooks and adopt an integrated management approach to the task. The first order of business is to emphasize the design of a company as opposed to the design of a product or system. This paper departs from that premise and then goes on to show the effectiveness of a small company so constituted in its contributions to the space effort. (Author)

**A75-16897 Producer certification - A cost-effective approach to parts inspection.** T. C. Fisher (United Aircraft Corp., Hamilton Standard Div., Windsor Locks, Conn.). *Society of Automotive Engineers, National Aerospace Engineering and Manufacturing Meeting, San Diego, Calif., Oct. 1-3, 1974, Paper 740810.* 4 p. Members, \$1.75; nonmembers, \$2.75.

This paper recounts the experience and ensuing results of the implementation of producer certification in its main factory area by the Hamilton Standard Div. of United Aircraft Corp. Producer certification, applicable to both purchased and shop material, is the assumption of the inspection function by the producing organization. The concept is not new - it has long been practiced in some companies - but its acceptance by the aerospace industry has been slow. The paper describes three quality assurance tasks successively transferred to the producing organization and the succeeding results, and concludes with a comparison of Hamilton Standard performance and cost experience under its conventional quality assurance system and the producer certification system. (Author)

**A75-16899** Process control techniques in airplane manufacturing. C. R. Cunningham (Boeing Commercial Airplane Co., Renton, Wash.). *Society of Automotive Engineers, National Aerospace Engineering and Manufacturing Meeting, San Diego, Calif., Oct. 1-3, 1974, Paper 740812.* 6 p. 6 refs. Members, \$1.75; nonmembers, \$2.75.

This paper presents an explanation of the reasons why process control is used in airplane manufacture. A discussion of cadmium plating, structural bonding, and machining provides examples of current control of these processes. (Author)

**A75-16913** F-14A status report - Operational capabilities, program accomplishments, and cost. M. Pelechach (Grumman Aerospace Corp., Bethpage, N.Y.). *Society of Automotive Engineers, National Aerospace Engineering and Manufacturing Meeting, San Diego, Calif., Oct. 1-3, 1974, Paper 740842.* 12 p. Members, \$1.75; nonmembers, \$2.75.

**A75-17235 #** An overview of Texas activities in remote sensing. R. N. Neese (General Land Office, Austin, Tex.), M. Ellis (Texas Water Development Board, Austin, Tex.), and J. Wells (Interagency Council on Natural Resources and the Environment, Austin, Tex.). In: *International Symposium on Remote Sensing of Environment, 9th, Ann Arbor, Mich., April 15-19, 1974, Proceedings. Volume 3.* Ann Arbor, Mich., Environmental Research Institute of Michigan, 1974, p. 2107-2112.

**A75-17318 #** Some comparisons between commercial and military aircraft maintenance and logistics. J. F. McDonald (Flying Tiger Line, Inc., Los Angeles, Calif.). *Tech Air*, vol. 31, Jan. 1975, p. 5-11. 9 refs.

The evolution of commercial airline maintenance and engineering systems is outlined. Three phases are described, from the pre-war and post-war periods, when fixed overhaul times for engines and airframes were the rule, to the introduction of the B-747, L-1011, and DC-10, which entailed new maintenance planning guidelines. 'On condition' engine control methods have increased the typical time between overhauls from about 1500 hours in 1960 to around 16,000 hours today. Periods between major maintenance operations have also increased for airframes, functional system components, and avionics systems. The FAA maintenance planning guidelines set forth in the MSG-2 document are discussed, and the concepts of scheduled overhaul, on condition (OC), and condition monitoring (CM) are explained. It is concluded that present military maintenance practices could be improved by drawing on the experiences of commercial aviation to increase the economic yield of equipment. A.T.S.

**A75-17357 #** Planning a buildup of aircraft equipment reliability (Planovani nabehu spolehlivosti letecké techniky). I. Forman. (*Konference o Spolehlivosti Letecké Techniky, Kunovice, Czechoslovakia, Mar. 19-22, 1974.*) *Zpravodaj VZLU*, no. 2, 1974, p. 53-57. In Czech.

Consideration of the process of increasing the reliability of aircraft equipment to required or acceptable levels. This process, called the reliability buildup process, is subject to certain laws, so that it can be planned. An explanation is given of some of these laws, and the use of a graphic representation of a model for system reliability improvement - called a reliability buildup curve - is discussed, with particular regard to the quantification of this curve on the basis of a factor indicating the degree of realization of correction procedures. A.B.K.

**A75-17479** Pacific range electromagnetic signature studies /Project PRESS/. W. S. Hahn (RCA, Missile and Surface Radar Div., Moorestown, N.J.). *RCA Engineer*, vol. 20, Oct.-Nov. 1974, p. 60-63.

The activities of the Pacific range electromagnetic signature studies (PRESS) program including mission planning, test execution, data reduction and analysis, and the development of radar for sensor systems are reviewed. The paper discusses the roles of the PRESS

program which are (1) to provide metric and signature data in test reentry vehicles, and (2) to act as a radar development test bed. Certain features of the sensors and related systems in the PRESS program are summarized. T.S.

**A75-17675** Management by task forces: A manual on the operation of interdisciplinary teams. L. W. Bass. Mt. Airy, Md., Lomond Books, 1975. 210 p. 141 refs. \$12.50.

Task force concepts are considered along with the categories of interdisciplinary activities, task forces for new product development, task forces for successive stages, the managerial control of task force systems, patterns of responsibility and authority, and benefits of interdisciplinary systems. Attention is given to task forces for corporate development, task forces for other corporate functions, projects in the public domain, the environment for industrial expansion, a systems approach to economic development, and the implementation of development opportunities. G.R.

**A75-17972** The costs of quality (Les coûts de la qualité). B. Veen. (*Quality*, vol. 18, Summer 1974.) *AFCIQ, Bulletin*, vol. 10, Dec. 1974, p. 4-9. In French. (Translation).

The concept of quality costs in manufacturing is discussed. Quality costs fall into three categories: the costs of defects, the costs of evaluation, and costs of prevention. The costs of defects include internal costs (remachining, repair, etc.) and external costs (recalls, replacements, guarantees, etc.). Costs of evaluation involve costs in sorting, inspection, and control. Costs of prevention are encountered in attempts to decrease the chance of fabricating defective products. The historical development of attempts to control quality costs has culminated in a global concept of prevention and integrated quality control to optimize the three types of costs and to suppress the causes of defects. Examples are given to show that such an integrated approach can significantly reduce quality costs. The usefulness of periodic review of quality costs is emphasized. Optimization of quality costs can reduce cost prices and improve competitiveness.

A.T.S.

**A75-18188** Advanced concepts in air traffic control. R. L. Maxwell (U.S. Department of Transportation, Office of Systems Engineering, Washington, D.C.). In: *Traffic control and transportation systems; Proceedings of the Second Symposium, Monte Carlo, Monaco, September 16-21, 1974.* Amsterdam, North-Holland Publishing Co.; New York, American Elsevier Publishing Co., Inc., 1974, p. 613-625. 9 refs.

Summary of a system-engineering and functional analysis performed on air traffic control information processing and control functions within the framework of a study carried out to define concepts for possible application to air traffic control operations in the 1990s. This study, called the Advanced Air Traffic Management System (AATMS) study, encompasses the application of higher levels of automation to control and data processing systems and considers new approaches to the mechanization of surveillance, navigation, and communication functions. Following a review of the evolution of the air traffic control system employed in the U.S., the reasons for undertaking the AATMS study are outlined, and the scope of the study is indicated. The AATMS study includes an automation applications study to determine a level of automation (man-machine combination) which will perform air traffic management responsibilities safely, efficiently, and economically; a functional analysis to identify and describe generic air traffic management activities to a high level of detail; and the development of an objective and quantitative evaluation technique for relating man-machine performance capabilities to air traffic management tasks. A.B.K.

**A75-18269 #** Extended energy management methods for flight performance optimization. A. J. Calise (Dynamics Research Corp., Wilmington, Mass.). *American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 13th, Pasadena, Calif., Jan. 20-22, 1975, Paper 75-30.* 8 p. 15 refs.

This paper develops a singular perturbation approach to extend existing energy management (EM) methods. A procedure is outlined for modeling altitude and flight path angle dynamics which are ignored in EM solutions. It is shown that feedback solutions can be obtained, even for EM problem formulations which currently result in a two-point boundary value problem. In particular, feedback controls for three-dimensional trajectory optimization problems have been derived using the extended energy management approach. The procedure outlined in this paper is general and applicable to solving a wide class of optimal control problems. It avoids the 'matching' problem that currently exists in applying singular perturbation theory to nonlinear problems. Asymptotically stable boundary layer solutions are a natural result of the approach. (Author)

**A75-18430 # Reliability of industrial systems with time reserve (Nadezhnost' tekhnicheskikh sistem s vremennoi izbytochnost'iu).** G. N. Cherkesov. Moscow, Izdatel'stvo Sovetskoe Radio, 1974. 296 p. 104 refs. In Russian.

The present work investigates the concept of time reserve as a means of enhancing the operational reliability of industrial systems. The influence of system productivity and structure, methods for monitoring operability, and operation algorithms on the effectiveness of time reserve is studied. A method is set forth for estimating the reliability of a cumulative system, in which there is a constraint on the total lost, unproductive time. Regenerative systems with constraints on time allowed for regeneration or on total idle time are examined. Estimation of reliability is considered for a multichannel, cumulative system with several identically productive devices working in parallel. For such a system, the reliability characteristics are studied as a function of number of channels, productivity of the channels, degree of interchangeability of the channels, method of information exchange, rules for carrying out repair work, and frequency of operability checks. P.T.H.

**A75-18774 # Incentive contract system - The ESRO-IV case (Le système de contrat avec intérêt - L'exemple d'ESRO-IV).** J. F. Lafay and S. Laurentie. *ESRO/ELDO Bulletin*, July 1974, p. 8-13. In French.

The incentive system employed in the ESRO-IV satellite contract between ESTEC and Hawker Siddeley Dynamics has had a favorable effect on its execution. The principles of the plan were as follows: factors of performance, delivery time, and cost savings were defined, and equations were formulated relating these factors to bonus amounts and to each other. For instance, a premium was stipulated for prompt delivery of the vehicle, but poor functioning of the vehicle in space would cancel this premium. Forty percent of the difference between actual cost and projected cost was to be awarded HSD if the projected exceeded the actual; ESTEC would only pay 90 percent of the difference if actual exceeded projected cost. In fact, HSD received 172,000 pounds in bonuses, and ESTEC only overspent its ESRO-IV budget by 5 percent. Similar incentive systems will be equally successful when the client has a clear idea of his objectives, premium parameters are unequivocally defined, and the plan is simple and appealing to all involved. S.J.M.

**A75-19433 \*** *How to help the new researcher adjust to the organization.* G. C. Bucher (NASA, Marshall Space Flight Center; Alabama, University, Huntsville, Ala.). *Research Management*, vol. 17, July 1974, p. 34-38. 7 refs.

**A75-19470 Hierarchical control of a communications system - An alternative analysis.** D. M. Schutzer (U.S. Defense Communications Agency, Washington, D.C.). In: *National Telecommunications Conference*, San Diego, Calif., December 2-4, 1974, Record. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 673-678. 7 refs.

The design objectives for a communications management and control subsystem are established. These design objectives include the requirement to manage and control the system's network configuration, traffic flow, transmission media quality, and equip-

ment and manpower resources. Several architectural alternatives to the control and management of the communications system are then defined. Each alternative represents a different distribution of the control and management processes amongst four major control points, namely, a central headquarters center, an area center, a sub-area or regional center, and the actual equipment level or reporting station level. These control subsystem alternatives can be evaluated with respect to many different factors, some quantifiable and some not. This paper introduces some quantitative techniques that are being used to compare the relative performance of the various alternatives. Examples of the application of these techniques to the evaluation process are provided. (Author)

**A75-19578 # The ISEE-B scientific satellite project.** H. Dittmar and J. Byrne. *Dornier-Post* (English Edition), no. 3-4, 1974, p. 11-15.

The International Sun Earth Explorer (ISEE) program is the first multi-spacecraft magnetospheric study mission. When data vary, it will be known whether those variations are actual discontinuities in local quanta of high-energy particles or merely a static pattern drifting past the spacecraft due to local acceleration of a boundary of a region already containing high particle fluxes. In particular, attack will be made on wave-particle interactions by craft ISEE-A and -B. Summarized in the article are ISEE's configuration and technical data; study objective; team organization and management; and time schedule and STAR companies' experience. S.J.M.

**A75-19692 \*** *The ASSESS program documenting and evaluating low cost techniques for conducting research in the flight environment.* L. B. Weaver (NASA, Marshall Space Flight Center, Spacelab Program Office, Huntsville, Ala.). In: *Human Factors Society, Annual Meeting*, 18th, Huntsville, Ala., October 15-17, 1974, Santa Monica, Calif., Human Factors Society, 1974, p. 266-277. 8 refs.

The Airborne Science Office (ASO) of the Ames Research Center has for 10 years operated an airborne scientific research program in infrared astronomy and other disciplines. The Lear Jet, CV-990, and C-141 flying laboratories are flown by ASO crews, while the major responsibility for defining, developing, and operating the experimental equipment is placed on individual researchers, who have included scientists from many countries. The ASSESS (Airborne Science/Shuttle Experiment Systems Simulation) program consists of two phases: Phase A documents the present management and operational practices of the ASO, and Phase B consists of airborne research missions constrained (for example, by crew confinement) to simulate certain aspects of experimental operations on Shuttle/Spacelab missions. Various parallels between the Airborne Science Program and Spacelab are pointed out and their applications to Spacelab planning are discussed. A.T.S.

**A75-19696** *The ten commandments for organizational effectiveness.* S. O. Parsons (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). In: *Human Factors Society, Annual Meeting*, 18th, Huntsville, Ala., October 15-17, 1974, Santa Monica, Calif., Human Factors Society, 1974, p. 325-332. 14 refs.

The role of the human factors specialist in designing organizations for people vs. designing equipment for people is discussed. Ten principles for organizational behavior are presented which maximize the human resources along with examples and quantitative data based upon Lockheed experience and other industrial applications. Particular emphasis is devoted to TEAM, a worker participation program initiated six years ago at Lockheed and still evolving in form; Upward Performance Evaluation results; and new communication techniques. (Author)

**A75-20023** *A new approach to R&D evaluation.* D. R. Augood (Kaiser Aluminum and Chemical Center for Technology, Pleasanton, Calif.). *IEEE Transactions on Engineering Management*, vol. EM-22, Feb. 1975, p. 2-10. 56 refs.

In developing the new approach a compromise was made between simpler methods and more complex procedures. The new method is to provide an evaluation tool for the R and D group of a medium-size chemical company. Attention is given to estimates of benefit, investment, R and D costs, and probabilities of success. The procedure should permit evaluation at any stage of the R and D progress. A description is given of a series of separate computer programs designed to implement the various objectives of the evaluation procedure. G.R.

**A75-21044** The special communicator and his behavior in research organizations - A key to the management of informal technical information flow. W. E. Holland (Houston, University, Houston, Tex.). *IEEE Transactions on Professional Communication*, vol. PC-17, Sept.-Dec. 1974, p. 48-53. 20 refs.

The research and development manager is responsible for the management of the technical information flow into and within his organization. Complicating his management task is the fact that a large amount of such information flows in informal, unplanned networks. Playing key roles in these informal information networks are a few special communicators (1) who act as information focal points, (2) who seem to have special access to information sources, and (3) who are involved in a relatively large number of information transactions. It may be possible for the manager to influence informal networks in a positive way by identifying special communicators, by further enhancing their exposure to information, and by giving them special consideration in the allocation of information-related resources. (Author)

**A75-21627** The Ariane agreement - Legal aspects and implementation (L'accord Ariane - Aspects juridiques et mise en œuvre). H. Kaltenegger and R. Orye (ESRO, Neuilly-sur-Seine, Hauts-de-Seine, France). *L'Aéronautique et l'Astronautique*, no. 49, 1974, p. 5, 6. In French.

The control of the execution of the Ariane launcher program has been entrusted to the European Space Research Organization (ESRO) while awaiting the formation of the European Space Agency (ASE). The National Center for Space Studies (CNES) is responsible for the first phase of the project. This is the first time a national corporation has been entrusted with the execution of a program by the participating countries. The need to define a means of cooperation between the manager of the project, who also has jurisdiction in the national space agency, and the international organization follows logically. S.J.M.

**A75-21628** The organization of the Ariane program (L'organisation du programme Ariane). F. D'Allest (Centre National d'Etudes Spatiales, Paris, France). *L'Aéronautique et l'Astronautique*, no. 49, 1974, p. 7-15. In French.

The technical framework, financial skeleton, developmental plan, management, and contractual framework of the program are discussed, with emphasis on the fourth category. The industrial organization and work breakdown structure are detailed in this category. The success of the program rests on the following objectives: (1) launching capacity corresponding to a 750 kg payload; (2) operational availability of the launcher until the end of 1980; (3) unitary cost of production and launching competitive with contemporary programs. In the technical domain, Ariane is a simple launcher, leaning on tested techniques. The organization of the program aims to provide a sure, inexpensive means of placing satellites with applications necessary to Europe in the coming decade in stationary orbit. S.J.M.

**A75-21635** The launch vehicle check-out system (Le banc de contrôle lanceur). A. Vuye (Etudes Techniques et Constructions Aérospatiale, S.A., Charleroi, Belgium). *L'Aéronautique et l'Astronautique*, no. 49, 1974, p. 63-67. In French.

The launcher check-out system is schematized and explained in terms of its design, makeup, plan of development, and subcontractors. Each of two identical consoles comprises six groups of

instruments: calculations, ground communications, specialized control functions, coupling modes, control consoles and simulators, and monitor logic. S.J.M.

**A75-22148** Administrative requirements regarding the employment of educational satellites (Das Verwaltungserfordernis in Bezug auf die Anwendung der Ausbildungssatelliten). F. I. Ordway (General Astronautics Research Corp., Huntsville, Ala.) and B. Kit (Maryland, University, Frankfurt am Main, West Germany). *Astronautik*, vol. 12, no. 1, 1975, p. 9, 10. In German.

Questions of adaptation between local systems of education and an educational satellite system along with problems regarding the place of the teacher in the new technology and budgetary questions are included in organizational and administrative problems which will have to be dealt with in an implementation of plans concerning the use of satellites in education. A number of recommendations are made for investigations and other measures which would be of great value in preparing the way for an intended employment of satellites as an educational aid. G.R.

**A75-22317** The CAIG - In pursuit of improved cost estimates. M. A. Margolis (U.S. Department of Defense, Office of the Assistant Secretaries of Defense /Program Analysis and Evaluation/, Washington, D.C.). *Defense Management Journal*, vol. 11, Jan. 1975, p. 20-24.

The present work describes the activities and achievements of the Cost Analysis Improvement Group (CAIG), established in 1972 for the purpose of conducting and interpreting program cost reviews, reviewing COC cost analysis policy and guidelines, and studying DOD cost data collection and retrieval systems. Service-independent estimating review plus the CAIG review have exerted significant pressure on program managers to develop more realistic cost estimates. The implementation of contractor cost data reports will allow actual cost data to be collected for the first time on all classes of weapon systems and allow for the first systematic review of cost data on indirect costs. P.T.H.

**A75-22318** Changing concepts of responsibility for Federal Procurement. L. Chiles (U.S. Senate, Subcommittee on Federal Procurement, Washington, D.C.). *Defense Management Journal*, vol. 11, Jan. 1975, p. 31-35.

The problem of modernizing weapon system acquisition is discussed. The need for a comprehensive framework of decision-making, responsibility, and public accountability is indicated. The problem of responsibility in procurement and systems acquisition has two dimensions: first, the broad problem of how to share responsibility between the public and private sectors, between government agencies and private contractors; and second, how Congress and the executive agencies can reconcile their separate responsibilities. P.T.H.

**A75-22503 #** Operational MARSAT - An evolving concept. R. E. Fenton (U.S. Coast Guard, Plans Evaluation Div., Washington, D.C.). *American Institute of Aeronautics and Astronautics, Annual Meeting and Technical Display, 11th, Washington, D.C., Feb. 24-26, 1975, Paper 75-282*. 8 p.

In April 1975, an Inter-Governmental Conference expected to lead to the establishment of an International Maritime Satellite System will convene in London. Preparation for the meeting has involved indepth examination of the operational, technical, economic and institutional alternatives which might govern the system's implementation and functioning, as developed by the combined expertise of a Panel of Experts on Maritime Satellites. This paper reviews the concept development process within the Panel in these four broad areas, culminating in its recommended approach for the creation of a new Inter-Governmental body, an International Maritime Satellite Organization (INMARSAT), to oversee the management of the space segment. (Author)

**A75-22913** Technology utilization - Incentives and solar energy. A. A. Ezra (National Science Foundation, Washington, D.C.).

## A75-23044

*Science*, vol. 187, Feb. 28, 1975, p. 707-713. 15 refs.

A technology delivery system is used to explain the role of incentives in stimulating public use of solar energy. The discussion is in the context of federally funded research and development. Incentives described include federal procurement, demonstration projects, information dissemination, construction grants, federal patents and licenses, federal cost sharing and leasing, federal testing and standardization, and loan guarantees and loan insurance. The energy utilization example of heating and cooling of homes is considered. It is stressed that the responsibility for bringing about technology utilization cannot be borne alone by the federal agency funding the R & D.

S.J.M.

**A75-23044 # Maintenance overhauls performed according to an overhaul schedule (Durchführung von Wartungsarbeiten nach Ablaufplan).** J. Bolte (Gesellschaft für internationale Flugverkehr mbH, Berlin, East Germany). *Technisch-ökonomische Informationen der zivilen Luftfahrt*, vol. 10, no. 6, 1974, p. 320-324. In German.

Advantages and disadvantages of using overhaul schedules to program aircraft repair are discussed. The design and function of these schedules with respect to organizational and technological factors is explained, and the consideration of disturbance variables in design and function is described. An example of an overhaul schedule system is given, consisting of six eight-hour shifts. An analysis of empirical knowledge about overhaul schedules is provided. S.J.M.

**A75-23045 # Methods of production planning in aircraft maintenance (Methoden der Durchlaufplanung in der Flugzeuginstandhaltung).** G. Rieger (Gesellschaft für internationale Flugverkehr mbH, Berlin, East Germany). *Technisch-ökonomische Informationen der zivilen Luftfahrt*, vol. 10, no. 6, 1974, p. 325-329, 349. In German.

Presently employed and proposed planning methods for the performance of aircraft servicing operations are discussed. The primary goal of this planning will be to keep as many aircraft as possible ready for take-off, and to maximize the conditions necessary to do this with the labor available. Two provisions must be satisfied in order for the planning to succeed: a plan for aircraft preparation must be available, and technical resources and speed in technical processes for all test procedures and aircraft types must exist. S.J.M.

**A75-23650 Changing horses in mid-stream - ATE software management transition.** M. D. Myles (U.S. Naval Air Systems Command, Washington, D.C.) and R. Brocchi (U.S. Naval Air Engineering Center, Philadelphia, Pa.). In: *Automatic testing '74; Proceedings of the Conference and Exhibition*, Brighton, England, November 5-8, 1974. Session 5. Newport Pagnell, Bucks., England, Network, 1974, p. 5-9 to 5-21.

The paper considers factors involved in the transition of automatic test equipment (ATE) software maintenance from the contractor to the military organizations which use the commodities. The planning required for the transition and the relative advantages of centralized and decentralized activities are discussed. The training requirements for maintenance-depot engineering personnel and the technical documentation required for the transition phase are outlined. A.T.S.

**A75-23924 Launching operations (Les opérations de lancement).** *La Recherche Spatiale*, vol. 13, Nov.-Dec. 1974, p. 22-25. In French.

The management procedures involved in a launching operation are summarized. Three phases constitute the unfolding of a launch project: (1) preparation, during which contacts are made between the mission director designated by the client and the chief of operations designated by CSG, and a contract is drawn up; (2) execution, during which the launching itself takes place; and (3) exploitation, during which data available from telemetering equipment is recorded, the trajectory of the vehicle is monitored and controlled, and a report is finally given to the client concerning the results and functioning of the vehicle. S.J.M.

**A75-24130 # Aerospace technology - Planning methodology and defense-technological objectives (Luftfahrttechnologie - Planungsmethodik und wehrtechnische Zielsetzung).** H. Ambos (Bundesministerium der Verteidigung, Bonn, West Germany). *Deutsche Gesellschaft für Luft- und Raumfahrt, Jahrestagung, 7th, Kiel, West Germany, Sept. 17-19, 1974, Paper 74-67*. 30 p. In German.

Questions of defense planning related to aerospace technology in the case of the department of defense of West Germany are considered, taking into account methodology and objectives on the basis of general relations. The stages involved in planning for objectives of defense technology are considered along with financial considerations and aspects of future aerospace technology. Specific defense-related investigations are concerned with novel developments, the improvement of conventional concepts, advances in fiber technology, questions of aircraft and missile control, and the development of basic physical theory related to aircraft design questions. G.R.

**A75-24590 The aeronautics and space industries in France (Les industries aéronautiques et spatiales en France).** G. Jalabert. Toulouse, Edouard Privat, Editeur, 1974. 517 p. 536 refs. In French.

The present work constitutes an in-depth study of the structure and organization of the French aviation and space industry. The work contains detailed and heavily researched analyses of the structure of companies, production, the interrelation of private and national sectors, the role of the state, the complexity of financing, fabrication costs, connections with air transportation and the world arms market, and aspects of European cooperation. The impact of the air and space industries on the whole of the French economy and on urban and rural development is investigated. Questions of labor and industrial relations are examined deeply. P.T.H.

**A75-24750 Energy systems - Modeling and policy analysis.** M. L. Baughman (MIT, Cambridge, Mass.). In: *Modeling and simulation. Volume 5 - Proceedings of the Fifth Annual Pittsburgh Conference*, Pittsburgh, Pa., April 24-26, 1974. Part 2. Pittsburgh, Pa., Instrument Society of America, 1974, p. 603-609. 9 refs. NSF Grant No. GI-39150.

A preliminary assessment of Project Independence is presented, and the role of energy systems analysis and modeling is related to the planning functions of government and industry in the area of energy resources. The MIT Energy System Modeling program is described, and three simulations of the effects of alternative oil prices on the goal of zero oil imports are discussed. It is shown that even with very optimistic supply scenarios, reducing the energy system to zero imports by 1980 may be quite difficult. F.G.M.

**A75-24756 Simulation - An aid to aircraft maintenance management.** B. T. O'Donald (Eastern Airlines, Inc., Miami, Fla.). In: *Modeling and simulation. Volume 5 - Proceedings of the Fifth Annual Pittsburgh Conference*, Pittsburgh, Pa., April 24-26, 1974. Part 2. Pittsburgh, Pa., Instrument Society of America, 1974, p. 813-818.

A composite simulation model, consisting of assembly environment analysis, feedback control, and defect flow analysis, is constructed for effective defect evaluation and control through identification and quantification of defects, their source, and appropriate remedial action. Three segments are used in the model: defining management control parameters and assembly environments as a series of regions where mechanical defects may be introduced; adopting elements of feedback control theory to develop interactive relationships among the environments, control parameters, and defect sources; and employing a defect filter to identify and quantify the environments, parameters, and sources. The three segments are discussed, and the dimension analysis is outlined. It is noted that analysis with this model can reduce failure related events, their high costs, and the amount of resources expended in repeated repairs of assemblies whose failure can be prevented. F.G.M.

**A75-25975** Airship economics. R. D. Neumann (Southern California Aviation Council, Inc., Pasadena, Calif.) and L. R. Hackney (Hackney and Associates, Pasadena, Calif.). In: Interagency Workshop on Lighter than Air Vehicles, Monterey, Calif., September 9-13, 1974, Proceedings. Cambridge, Mass., MIT Flight Transportation Laboratory, 1975, p. 41-52.

This paper will deal with projected operating and manufacturing costs of a large airship design which is considered practical with today's technology and environment. It will be based on data and information developed during an 18-month study by the Southern California Aviation Council, Inc. as to the question of feasibility, engineering, economics and production problems related to a large metalclad type airship. It will provide an overview of other classic airship designs and explain why metalclad was selected as the most prudent and most economic design to be considered in the 1970-80 era. Crew operation, ATC and enroute requirements will be covered along with the question of handling, maintenance and application of systems to the large airship. (Author)

**A75-25979** An approach to market analysis for lighter than air transportation of freight. P. O. Roberts, H. S. Marcus (MIT, Cambridge, Mass.), and J. H. Pollock. In: Interagency Workshop on Lighter than Air Vehicles, Monterey, Calif., September 9-13, 1974, Proceedings. Cambridge, Mass., MIT Flight Transportation Laboratory, 1975, p. 87-110. 7 refs.

This paper presents an approach to marketing analysis for lighter-than-air vehicles in a commercial freight market. After a discussion of key characteristics of supply and demand factors, a three-phase approach to marketing analysis is described. The existing transportation systems are quantitatively defined and possible roles for lighter-than-air vehicles within this framework are postulated. The marketing analysis views the situation from the perspective of both the shipper and the carrier. A demand for freight service is assumed and the resulting supply characteristics are determined. Then these supply characteristics are used to establish the demand for competing modes. The process is then iterated to arrive at the market solution. (Author)

**A75-25980** Market assessment in connection with lighter than air. J. E. R. Wood (Aerospace Developments, London, England). In: Interagency Workshop on Lighter than Air Vehicles, Monterey, Calif., September 9-13, 1974, Proceedings. Cambridge, Mass., MIT Flight Transportation Laboratory, 1975, p. 111-121.

A review of the marketability of the airship is given, and the relative energy consumption and speed potential of the airship is compared to other modes. Guidelines to areas of initial development are also provided, together with a brief historical review. (Author)

**A75-26099** Warranties as a life-cycle-cost management tool. C. R. Knight (ARINC Research Corp., Annapolis, Md.). In: EASCON '74; Electronics and Aerospace Systems Convention, Washington, D.C., October 7-9, 1974, Record. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 621-623.

The use of warranties to control life-cycle costs of military equipment is considered as an alternative to standard procurement approaches. It is shown that warranties would make the manufacturer responsible for a major portion of life-cycle costs and would have a positive effect on equipment reliability. Examples of warranty use in military procurement are presented, including the repair and refurbishment of gyros in the Navy's A-4 and F-4 and the Air Force's F-111 aircraft and warranty agreements for the Navy's AN/APN-194 altimeter, AN/APN-99(V-1) Omega receiver, and an aircraft hydraulic pump. Disadvantages of warranties, especially the possibility of dependence on commercial sources for maintenance usually performed on the operational level, are discussed. Arguments against warranty use for all military procurements are advanced. F.G.M.

**A75-26100** Designing for LCC. W. H. Boden (Magnavox Co., Fort Wayne, Ind.). In: EASCON '74; Electronics and Aerospace Systems Convention, Washington, D.C., October 7-9, 1974, Record. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 624-629.

Designing for Life Cycle Cost (LCC) is an involved system of trade-offs among initial acquisition cost, initial logistics costs, and maintenance and use costs for a prescribed period for use. It is further complicated by the specific sampling plan and cost model to be used to verify the predicted LCC. The cost model and the design approach would vary greatly between the extremes of an entire airplane and an aircraft radio. The model and design discussed here deal with a pioneering government - industry effort on a small high-production radio. (Author)

**A75-26499** Air Europe: The policy of cooperation among airline companies of the European Six (Air Europe: La politique de coopération entre les compagnies aériennes de l'Europe des Six). C. Delepiere-Nys (Bruxelles, Université Libre, Brussels, Belgium). Brussels, Editions de l'Université de Bruxelles, 1974. 507 p. 83 refs. In French. \$22.50.

Difficulties inherent in the present civil aviation company transportation system, air transport inside the CEE, air transport in areas outside of Europe (such as the U.S.), and perspectives on the proposed cooperation policy are discussed. It is shown how such a cooperation would be in the best economic interests of all nations concerned. The controversy that developed over Article 84 of the Rome agreement is described. Various past cooperative organizations, and the technical advances that accrued to them, are considered. S.J.M.

**A75-26730** # Space Shuttle avionics redundancy management. E. A. O'Hern (Rockwell International Corp., Space Div., Downey, Calif.). American Institute of Aeronautics and Astronautics, Digital Avionics System Conference, Boston, Mass., Apr. 2-4, 1975, Paper 75-571. 10 p.

An overview is presented of the current Space Shuttle avionics redundancy management system. The requirements placed upon the system, stemming from mission success, flight safety, and cost considerations, are reviewed. The avionic system configuration is described, showing the physical and functional interfaces among the various subsystem elements, and the redundancy levels for the elements are highlighted. Then the manner in which the redundancy is managed, utilizing various fault detection and identification, system reconfiguration and signal selection techniques, is outlined. Finally, an approach to system performance assessment is described, and several key design issues under consideration are discussed. (Author)

**A75-27530** \* # Safety management of a complex R&D ground operating system. J. F. Connors and R. A. Maurer (NASA, Lewis Research Center, Cleveland, Ohio). Federal Occupational Safety and Health Council of Southern California, Annual Safety Symposium on the Engineering Aspects of Safety, Port Hueneme, Calif., Feb. 20, 1975, Paper. 36 p. 9 refs.

A perspective on safety program management has been developed for a complex R&D operating system, such as the NASA-Lewis Research Center. Using a systems approach, hazardous operations are subjected to third-party reviews by designated area safety committees and are maintained under safety permit controls. To insure personnel alertness, emergency containment forces and employees are trained in dry-run emergency simulation exercises. The keys to real safety effectiveness are top management support and visibility of residual risks. (Author)

**A75-27585** Operational availability and reliability model. H. I. Shulman (U.S. Army, SAFEGUARD System Evaluation Agency, White Sands Missile Range, N. Mex.) and H. L. Smith (Texas, University, San Antonio, Tex.). IEEE Transactions on Reliability, vol. R-23, Dec. 1974, p. 290-294.

The Operational Availability and Reliability (OAR) model is designed to evaluate the availability and reliability of systems with components in any combination of series, parallel, and r-out-of-n:G combinations. In terms of the OAR model, systems are composed of Optimal Replaceable Units (ORUs). Failure, corrective maintenance, and spare acquisition probabilities are calculated via random sampling of the ORU failure, corrective maintenance, and spare acquisition distributions. ORU failures are statistically independent and, to allow for versatility in describing system characteristics, '3-parameter Weibull' distributed. System availability and reliability are then computed by employing the system failure, corrective maintenance, and spare acquisition data. (Author)

**A75-27587** *Insight into standby redundancy via unreliability.* N. G. Dennis (GE National Space Technology Laboratories, Bay Saint Louis, Miss.). *IEEE Transactions on Reliability*, vol. R-23, Dec. 1974, p. 305-313. 23 refs.

Standby redundancy is the oldest form of redundancy using switches. After a failure of the working element, an identical spare is substituted by switching. Unfortunately, the Coverage (the probability of a successful reconfiguration) of the system is always less than unity and, furthermore, the spare element might fail before it is switched in. Using certain assumptions, this paper provides simple formulae for the reliability of a standby system. Criteria for the Coverage and the best number of standby elements are presented. Simple expressions for a Mission Time Improvement Factor are derived. A general discussion of standby redundancy is given to place the assumptions in proper perspective. (Author)

**A75-27824** *Management of quality control (Comment gérer la qualité).* J. M. Juran. *AFCIO, Bulletin*, vol. 11, Mar. 1975, p. 9-15. In French.

A definition of quality control, some aspects of product development, manufacturer-dealer relations, manufacture and quality, inspection and testing, marketing vs quality, the costs of quality control, the improvement of quality, and labor motivation are discussed. The work seeks to encourage rational and efficient thinking as well as a search for original solutions to quality control management problems. S.J.M.

**A75-27838 #** *Organization of centralized maintenance of aircraft assemblies (Organizatsiya tsentralizovannogo remonta agregatov samoletov).* S. N. Malkov. Moscow, Izdatel'stvo Transport, 1974. 180 p. 30 refs. In Russian.

The present work examines theoretical and practical considerations for setting up a steady production basis and rational organization for centralized repair operations on aircraft assemblies. Methods are set forth for determining repair requirements, optimal production allocation and program planning, and the implementation of typical technology and complex, mechanized work flow lines for group repair of assemblies. P.T.H.

**A75-27949** *Communication nets and uncertainty in R & D planning.* T. Connolly (Georgia Institute of Technology, Atlanta, Ga.). *IEEE Transactions on Engineering Management*, vol. EM-22, May 1975, p. 50-54. 17 refs.

This paper reports an empirical study of 115 participants in R & D planning in a large Federal Government agency. Two hypotheses were tested, examining the relationship between type of work planned and (1) the participants' perceived uncertainties and (2) the centralization of the decision-related communication net. The data indicate that perceived uncertainties tend to be lower, and communications nets more centralized, as work planned becomes more applied. Secondary findings indicate that increased decentralization of the decision-related communication net may be an adaptive response to organizational decision problems of high uncertainty. Further research is suggested, and some general implications for the working manager are identified. (Author)

**A75-27950** *A longitudinal study of communication in research - Technical and managerial influences.* R. L. Taylor (U.S. Air

Force Academy, Colorado Springs, Colo.) and J. M. Utterback (MIT, Cambridge, Mass.). *(Operations Research Society of America and the Institute of Management Sciences, Joint National Meeting, 45th, Boston, Mass., Apr. 22-24, 1974.) IEEE Transactions on Engineering Management*, vol. EM-22, May 1975, p. 80-87. 26 refs.

Results of a study are reported which show that changes in organization structure, technical assignment, and the formation of project groups all tend to reduce technical communication both within the changed group and between the changed group and sources of technical information outside the organization. This and other findings suggest that factors besides structural and technical variables account for the communication 'gatekeeper' role prevalent in studies of technical communication patterns in R & D organizations. S.J.M.

**A75-27986** *The program A 300 B - A problem for the European national economy (Das Programm A 300 B - Eine Aufgabe für die europäische Volkswirtschaft).* F. Kracht (Airbus Industrie, Toulouse, France). *(Deutsche Gesellschaft für Luft- und Raumfahrt, Jahrestagung, 6th, and Österreichische Gesellschaft für Weltraumforschung und Flugkörperteknik, Jahrestagung, 11th, Innsbruck, Austria, Sept. 25-28, 1973.)* In: *Deutsche Gesellschaft für Luft- und Raumfahrt, Yearbook 1973.* Cologne, Deutsche Gesellschaft für Luft- und Raumfahrt, 1974, p. 163-178. In German.

In 1967 an agreement was reached between the governments of Germany, France, and England regarding a study for the definition of an airliner which was to be developed by the European industry. The result of this study was the project A 300. The program was continued by France and Germany, when the British government decided to withdraw from the project in 1968. Later Holland and Spain decided to participate. Questions of program organization are discussed along with the definition of aircraft characteristics, the division of the development work among the various participating firms, the current status of the program, details of flight testing, and economic problems. G.R.

**A75-27999** *Statistical tolerancing - The state of the art. III - Shifts and drifts.* D. H. Evans (Oakland University, Rochester, Mich.). *Journal of Quality Technology*, vol. 7, Apr. 1975, p. 72-76. 15 refs. NSF-supported research.

It is pointed out that in addition to the ordinary requirements in a quality control program the program for statistical tolerancing should include tests on the distributions. Statistical tolerancing includes assumptions about these distributions and the establishment of an adequate agreement between assumed and actual values is imperative. Attention is given to the interface between statistical tolerancing and quality control with respect to distributional changes. G.R.

**A75-30146** *Cost control in the Atlas/Centaur launch vehicle program.* G. L. Hansen, K. E. Newton, W. A. Roberts, P. J. O. Leary, and J. E. Niesley (General Dynamics Corp., San Diego, Calif.). *Raumfahrtforschung*, vol. 19, Mar.-Apr. 1975, p. 90-96.

A brief overview of the history of the Atlas and Centaur programs from their initial development to today's operational launch vehicles is presented. The management organizational structure and evolution are described, as well as the different versions of Atlas and Centaur produced during the program's history. The operational vehicles' performance and reliability are examined. Cost of Atlas and Centaur vehicles for the past ten years of operation is presented, as well as what these vehicles could cost because of inflation trends. Potential areas where costs could have been significantly increased during the last ten years are indicated and the cost control measures employed by General Dynamics at those junctures delineated. Specific examples of cost reduction in the production, checkout and test, launch services, and management/contractual areas where significant cost reductions have been effected are cited. (Author)

**A75-30375 #** *Energy: A plan for action.* E. Teller (California, University, Berkeley, Calif.). New York, Commission on

Critical Choices for Americans, 1975. 80 p. \$2.00.

Action is outlined that will be necessary to achieve the implementation of a national conservation ethic, the introduction of available energy-saving devices, the removal of barriers to increased energy production, and the establishment of better cooperation among energy-consuming nations. Targets for the year 1985, predictions of our position in the year 2000, and appendices on action recommendations, U.S. energy demand and supply, production sources, R & D, and manpower are contained in the report.

S.J.M.

**A75-31442 # Stepping up to a public service satellite consortium.** H. H. Hupe (U.S. Department of Health, Education, and Welfare, Office of Telecommunications Policy, Washington, D.C.). *Astronautics and Aeronautics*, vol. 13, May 1975, p. 59-61.

For the past year it has been a HEW objective to create a widely-based, user-controlled consortium of educators, medical and health practitioners, and other public-service providers who have potential satellite needs. The consortium is to determine the optimum technical system based on the needs of its members. In addition the consortium will also be concerned with making arrangements for financing, leasing and/or acquisition, and use sharing of all components of such a system. G.R.

**A75-32081 The role of technology in commercial aircraft policy formulation;** Proceedings of the Conference, Bethesda, Md., December 2-4, 1974. Conference sponsored by the American Institute of Aeronautics and Astronautics and National Science Foundation; NSF Grant No. ST-42974. Edited by J. Grey (American Institute of Aeronautics and Astronautics, Inc., New York, N.Y.). New York, American Institute of Aeronautics and Astronautics, Inc., 1975. 60 p.

An attempt is made to provide objective information on the role of technology in federal policy formulation for commercial aircraft, with particular emphasis on exports. Viewpoints from science, finance, industry, and airline engineering are presented; working group reports discuss technology, management, and RT & D factors as well as means of strengthening the technology base. Recommendations include federal backing of a strong RT & D program, unrestricted foreign sale of currently available commercial equipment, free dissemination of data and results generated by basic research, implementation by industry of screening processes to safeguard critical technology in foreign licensing and joint-venture agreements, and federal support of commercial aircraft exports in the increasingly competitive world market. S.J.M.

**A75-32082 The future of the U.S. space program.** A. L. Levine (Baruch College, New York, N.Y.). New York, Praeger Publishers, Inc., 1975. 212 p. 28 refs. \$16.50.

Past and current U.S. space programs are considered, taking into account questions of early policy developments and NACA, the creation of NASA, NASA under Eisenhower, and the commitment to the manned lunar landing. The post-Apollo policy struggle is discussed, giving attention to a report considering the support for a manned Mars landing and President Nixon's space policy statement. Prospects for the future are examined. The controversy over the Shuttle is considered along with the future roles and missions for the civilian space program. G.R.

**A75-32100 # The use of project scheduling for more general problems - An application to the space transportation system.** R. J. O'Doherty (Martin Marietta Aerospace, Denver, Colo.). *Operations Research Society of America and Institute of Management Sciences, National Meeting, Chicago, Ill., Apr. 30-May 2, 1975, Paper*. 29 p. 9 refs. Research supported by the Martin Marietta Industrial Research and Development Funds.

An investigation is conducted concerning a suitable procedure for the scheduling of the flight preparations in the case of the space transportation system which is to consist of the Space Shuttle and

the Space Tug. It is found that a computer-aided scheduling approach is required. The problems involved, however, are too complex for the employment of totally automated techniques. The operational techniques considered can be used iteratively and provide good schedules which satisfy all the flight preparation constraints. Specific problems of flight preparations scheduling are illustrated with the aid of an example. G.R.

**A75-33073 # Statistical methods of quality inspection and control: Calculation of optimal variants (Statisticheskie metody regulirovaniya i kontrolya kachestva: Raschet optimal'nykh variantov).** V. V. Golovinskii. Moscow, Izdatel'stvo Mashinostroenie, 1974. 264 p. 47 refs. In Russian.

Problems in the selection of optimal statistical methods for assuring the prescribed quality of mass-produced articles are examined. Detailed mathematical foundations of sampling control methods are laid out. P.T.H.

**A75-33550 B-1 airborne strategic deterrent.** *Air International*, vol. 8, Feb. 1975, p. 59-64, 100.

The B-1A now under development is a swing-wing, supersonic strategic bomber with an unrefueled range of 6100 miles. The bomber's primary mission tactic is to be low-altitude penetration at near-sonic speed. It would also be capable of high-altitude supersonic missions. A detailed cutaway drawing is given. The B-1A concept, program tradeoffs, and development testing are discussed. A.T.S.

**A75-33565 Problems of federal and state court jurisdiction and venue in products liability litigation - Defendants viewpoint.** M. L. Noyer. *Journal of Air Law and Commerce*, vol. 40, Autumn 1974, p. 637-652. 55 refs.

Trends in choosing alternative forums for litigation are examined in the context of the defense in aviaational products liability suits. The effects of long-arm statutes on jurisdictional choices is discussed, and precedents set in regard to jurisdiction in tortious acts are described. Alternative ways for defense counsel to maneuver litigation to a more favorable forum are summarized, including invoking the doctrine of forum non conveniens, removing the action from state to federal court, and dismissal for improper venue. Important cases involving airlines or aircraft manufacturers are discussed which have involved transfer of jurisdiction. F.G.M.

**A75-33569 Consequential and special damages - Tempest in the tariff.** W. R. Johnston. *Journal of Air Law and Commerce*, vol. 40, Autumn 1974, p. 704-722. 95 refs.

Historical and legal background information is presented in regard to the CAB's Liability and Claim Rules and Practices Investigation (1970) and the subsequent decision by an administrative law judge that air carriers would be liable for consequential and special damages incurred in the course of handling air freight. The common-law rule of carrier liability is traced from its origins under English common law (1703) through the Federal Aviation Act of 1958, and the development of liability for consequential and special damages is similarly traced from the British landmark case of Hadley v. Baxendale (1854) through the major American cases up to 1970. The arguments presented in the CAB's (1970) investigation are presented, and it is concluded that liability for consequential and special damages is almost certain to be imposed at some future time. F.G.M.

**A75-34541 Airports - Systems planning and operations management.** W. H. Arata, Jr. (Northrop Corp., Arlington, Va.). In: *International Conference on Systems, Man, and Cybernetics, Dallas, Tex., October 2-4, 1974, Proceedings*. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 186-190.

Airports have a great deal to do with the economic development of the region they serve. Consequently, adequate systems planning is necessary to develop the most economical and functional plan. In

addition to a well-designed airport, it is necessary to plan the operational aspects so that the airport is efficiently run. In order to achieve these aims, it is necessary to properly organize the available manpower, taking into account existing and trainable skills. Important throughout the planning is that the resulting airport and its operation must take into account all safety considerations.

(Author)

**A75-34950**      **The key to cost effective test programs.** R. G. Hill (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). In: Institute of Environmental Sciences, Annual Technical Meeting, 21st, Anaheim, Calif., April 14-16, 1975, Proceedings. Volume 2,

Mount Prospect, Ill., Institute of Environmental Sciences, 1975, p. 84-87.

The management techniques discussed were developed to provide effective test integration for the C4 missile intended for use in the Trident submarines. Test integration is required to ensure identification, approval, and funding of test objectives, equipment, facilities, and hardware requirements. Test programs are evaluated and realigned to ensure that the best test program is being pursued.

V.P.

**A75-36107**      **The dynamics of the civil aviation industry.** A. P. Ellison (Aviation Planning Services, Montreal, Canada) and E. M. Stafford (Southampton, University, Southampton, England). Farnsborough, Hants., England, Saxon House, D. C. Heath, Ltd.; Lexington, Mass., Lexington Books, D. C. Heath and Co., 1974. 361 p. 363 refs. \$18.

The structure of the civil aviation market is considered along with a model of the civil aviation industry, air passenger demand models, questions of capital stock measurement, and the world demand for civil aircraft. Problems regarding the order-delivery lag in the world civil aviation industry are examined, taking into account distributed lag studies of engineering processes, aspects of exploratory model fitting, and an accurate distributed model derivation. Attention is also given to the overall model, passenger demand forecasts, and aircraft forecasts for 1980.

G.R.

**A75-36296**      **SAFEGUARD data-processing system.** Bell System Technical Journal, Special Supplement, 1975. 269 p.

Papers are presented which describe the systems engineering concepts, hardware, software, and support systems for the data processing system of SAFEGUARD, an antiballistic missile system. Some of the topics covered include architecture of central logic and control, maintenance and diagnostic subsystem, process design in the structure of real-time software systems, system error control, debugging a real-time multiprocessor system, CENTRAN - a case history in extendible language design, and structure programming and program production librarian.

P.T.H.

**A75-36718**      **European industry and civil air transport /28th Louis Blériot Lecture/.** P. Lecomte (Société Nationale Industrielle Aérospatiale, Paris, France). Aeronautical Journal, vol. 79, May 1975, p. 189-197. 5 refs.

A historical overview of the Western European aircraft industry, the article characterizes the development, current problems and future objectives of public transport aircraft of moderate capacity (40 or more passengers). Europe has the necessary expertise and research establishment to meet the requirements and the needs of the 1980's aircraft. A cooperative, inter-European undertaking, charging a single organization (originating from all the constructors) with: (1) the commercial and financial role for all products, namely sales and product support; (2) overall planning and distribution of work amongst the constructors to achieve the best possible workload continuity; and (3) progressive standardization of methods and products is suggested for the European aircraft industry.

M.G.

**A75-37624**      **A philosophy of the flight test of airborne communications systems.** J. J. Foshee (Electronic Communications,

Inc., St. Petersburg, Fla.). In: NAECON '75; Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, June 10-12, 1975. New York, Institute of Electrical and Electronics Engineers, Inc., 1975, p. 46-49. 6 refs.

A discussion of the formal flight test phase as part of the development cycle of airborne communications systems is given, and factors useful to management for determining the extent of the required flight test effort are discussed. Emphasis is on proper planning of the flight test to reduce costly time delays and on risk reduction as a primary aim of the flight test.

S.J.M.

**A75-38027** # **Education satellites - A goal or goal.** L. P. Grayson (National Institute of Education, Washington, D.C.). American Institute of Aeronautics and Astronautics, Conference on Communication Satellites for Health/Education Applications, Denver, Colo., July 21-23, 1975, Paper 75-892. 10 p. 28 refs.

Several significant issues involved in the widespread application of satellites in education are discussed. These issues include implications for educational and cultural change, organizational problems in operating a major satellite-based educational system, financing of satellite-connected activities, and the need to aggregate the market in order to amortize large investments for equipment and production while maintaining a diversity of educational offerings to satisfy local needs. Emphasis is on the caution required in the development of this new technology to avoid creating manifold new problems.

S.J.M.

**A75-38029** # **Regulatory considerations for public service satellites.** D. M. Redmond (Dow, Lohnes and Albertson, Washington, D.C.). American Institute of Aeronautics and Astronautics, Conference on Communication Satellites for Health/Education Applications, Denver, Colo., July 21-23, 1975, Paper 75-894. 6 p.

The state of federal regulation concerning domestic satellites is reviewed, and the legal procedures an applicant for a domestic communications satellite must go through are examined. These are discussed in terms of the possible development of public service oriented satellites. Although nothing in present regulations can stand in the way of such development, a little more positive action on the part of the Federal Communications Commission is urged.

P.T.H.

**A75-38471** # **AIAA examines NASA's Outlook for Space.** J. Newbauer. Aeronautics and Astronautics, vol. 13, July-Aug. 1975, p. 21-23, 69, 73.

An AIAA ad hoc committee reviewed a draft completed by NASA of an 'Outlook for Space'. The contents of this draft will be used for presentations to the Congress and other groups. Study objectives as specified by NASA management are considered along with the main comments of the AIAA committee. Questions are raised concerning the advisability of a more substantial space effort which would lead to a space engineering center near L5 as a significant or, perhaps, crucial contribution toward the solution of some of mankind's most pressing problems.

G.R.

**A75-39013** # **Project management - A system-oriented representation and interpretation (Projektmanagement - Eine systemorientierte Darstellung und Interpretation).** A. Zogg. Zürich, Eidgenössische Technische Hochschule, Doktor der technischen Wissenschaften Dissertation, 1973. 398 p. 208 refs. In German.

The reported investigation is concerned with the basic features of project management as a concept for the optimal design and the implementation of the procedures required to solve complex problems with project characteristics. It is also attempted to present the detailed information which is needed to employ project-management approaches optimally in the solution of concrete problems. The project concept is considered along with the system concept and the employment of the cybernetic model in the design of the procedure for solving the problem. Details regarding the problem-solving process are examined, giving attention to questions of organization and process control.

G.R.

A75-39021 # European collaborative military aircraft programme - Jaguar. I. R. Yates (British Aircraft Corp., Ltd., Preston, Lancs., England). In: Anglo-American Aeronautical Conference, 14th, Los Angeles, Calif., August 4-7, 1975, Technical Papers. New York, American Institute of Aeronautics and Astronautics, Inc., 1975. 11 p.

The overall program for the design and development of the Anglo-French tactical fighter-trainer supersonic aircraft called Jaguar is described. The discussion covers the background of Anglo-French collaboration and management in solving problems associated with the airframe and engines of the Jaguar. Considerable wind tunnel testing is done and great care is taken to shape the rear fuselage lines above the jets to minimize base drag. Changes between the first prototype and the final production aircraft are examined. The production and in-service phase is outlined. S.D.

A75-39192 System concepts for future air traffic control planning. W. E. Simpson (U.S. Department of Transportation, Washington, D.C.). In: NEREM 74; Northeast Electronics Research and Engineering Meeting, Boston, Mass., October 28-31, 1974, Record, Part 1. Newton, Mass., Institute of Electrical and Electronics Engineers, Inc., 1974, p. 16-18. 8 refs.

Some preliminary conclusions from a study investigating possible new avenues for future air traffic control planning are discussed. The guiding principle behind new system concepts was that more emphasis can be placed on management aspects such as planning and organization. A specific Advanced Air Traffic Management System concept was defined. The concept involves highly centralized ground-based facilities to provide air traffic management and flight information and assistance services. Specifically, this includes a constellation of satellites over the U.S. and contiguous oceanic regions for surveillance, navigation, and data link communications, the use of the Discrete Address Beacon System in high density airspace regions, and centralized control facilities provided by three en route centers. P.T.H.

A75-39894 # Management views on major issues facing the airlines. B. F. McLeod (Pan American World Airways, Inc., New York, N.Y.). In: Radio Technical Commission for Aeronautics, Annual Assembly Meeting, Washington, D.C., November 20, 21, 1974, Proceedings. Washington, D.C., Radio Technical Commission for Aeronautics, 1975, p. A-1 to A-15.

Questions regarding the safe and economical expansion of the air traffic control system are examined. The development of techniques is required which will overcome the increased terminal area spacing which has been imposed as a result of wake turbulence. It is recommended to improve the current radar beacon system. Attention is given to data link systems, long range navigation systems, aeronautical satellites, and aspects of area navigation. Requests are made for a strong continuing effort to improve the reliability of instrument approach aids at major U.S. airports. G.R.

A75-40517 An overview of low medium density short-haul air transportation policy implementation. F. R. Mazzitelli (Grumman Aerospace Corp., Bethpage, N.Y.). Society of Automotive Engineers, Air Transportation Meeting, Hartford, Conn., May 6-8, 1975, Paper 750610. 8 p. 13 refs.

A review is presented of the national transportation policy as it specifically affects the low and medium density short-haul air transportation system. In 1971, the problem of providing air service to low density, short-haul markets had been identified as the third most pressing difficulty the aviation industry faced (following noise and congestion). A low-density, short-haul program which included system concept studies and vehicle definition studies was initiated by DOT and NASA in 1972 to define technology and research goals. G.R.

A75-40614 The Florida Solar Energy Center. W. B. Phillips (Florida State University, Tallahassee; Florida Solar Energy Center, Port Canaveral, Fla.). In: Technology today for tomorrow; Proceedings of the Twelfth Space Congress, Cocoa Beach, Fla., April

9-11, 1975. Cocoa Beach, Fla., Canaveral Council of Technical Societies, 1975, p. 5-1 to 5-4.

The Florida Solar Energy Center is designed to serve as a central facility for solar energy activities of the state's nine public universities, as well as private institutions which choose to participate. Activities of the Center will include research, development, information dissemination, and demonstration projects. The Center will include Divisions of Research, Development, Tests and Standards, Education, Information, and Technical Assistance. The site consists of 20 acres on the water at Port Canaveral and adjacent to the Kennedy Space Center. Four existing buildings including an auditorium, laboratories, offices, a library, TV studios, and classrooms will be used for the initial operations of the Center. (Author)

A75-40653 # Algorithm for multicriterion operation optimization of an enterprise under an automatic control system (Algorithm mnogokriterial'noi optimizatsii raboty predpriatiia v usloviyah ASU) P. D. Danil'chenko, Ia. V. Safronov, V. B. Sharonov (Khar'kovskii Aviationskiy Institut, Kharkov, Ukrainian SSR), and Iu. I. Falinich. Upravliaushchie Sistemy i Mashiny, May-June 1975, p. 68, 69. In Russian.

A75-40911 # Analysis of the performance of an industrial control system on the basis of its information model. I (Analiz funktsionirovaniia sistemy upravleniya predpriatiem na baze ee informatsionnoi modeli. I). V. S. Moiseev. Aviatsionnaya Tekhnika, vol. 18, no. 2, 1975, p. 64-68. 9 refs. In Russian.

A formalized description of an industrial control system is obtained, making use of certain concepts in modern systems theory. Definitions of the basic elements of the control system's information model are introduced, and methods of describing such elements in a form suitable for storage in a computer are developed. The model obtained is applied to the analysis of the performance of the control system of an aircraft manufacturing plant. V.P.

A75-40920 # Aggregation of economic objects and of their indices (Agregirovanie ekonomicheskikh ob'ektov i ikh pokazatelei). T. K. Sirazetdinov. Aviatsionnaya Tekhnika, vol. 18, no. 2, 1975, p. 117-123. In Russian.

The paper outlines two approaches to modeling an economic process (production, warehousing, etc.), one based on following the movement of an isolated section of raw material, for example, during the whole course of the production and exchange process, the other based on studying the input and output phenomena in one isolated section of the process. A model is then proposed for aggregative economic objects, whereby if several economic objects are under investigation that can be described in identical units, their combined features can be calculated on the basis of the information concerning each individual object. Some economic indices are given mathematical definition, including the average productivity of labor over a period of time, the instantaneous labor capacity, average labor capacity, instantaneous and mean energy capacity and material capacity, and intrinsic value. Formulas for the aggregation of these indices are given. P.T.H.

A75-41234 # The development of problem-oriented decision models (Die Bildung problemangepasster Entscheidungsmodelle). F. Laager. Zürich, Eidgenössische Technische Hochschule, Doktor der technischen Wissenschaften Dissertation, 1974. 188 p. 82 refs. In German.

The general characteristics of an approach for solving a given problem are examined, taking into account the significance of the 'decision' as a component of this approach. A basic decision model is considered together with the necessity to develop a model. Approaches are discussed for making in a given situation a reasonable decision with the aid of a problem-oriented decision model. Questions concerning the application of the described procedure are investigated. Attention is given to investment problems involving a building for a bank and storage organization problems related to the management of a machine factory. G.R.

**A75-42832** Air freight forecasting and pricing. G. K. Sletmo (Columbia University, New York, N.Y.). *Logistics and Transportation Review*, vol. 11, no. 1, 1975, p. 7-29. 13 refs. Research supported by Columbia University.

Common procedures in air freight forecasting are critically examined. It is demonstrated that conclusions frequently drawn from such forecasts, particularly concerning rate or price elasticities, may be erroneous or misleading. The results obtained in the analysis show that the demand for air freight is price-inelastic. It is suggested that the road to profitability in air freight lies in a more rational rate structure and in improved service. G.R.

**A75-42974** # System effectiveness and safety /SES/ in AIAA. J. L. Maybell. *Astronautics and Aeronautics*, vol. 13, Sept. 1975, p. 54-57. 19 refs.

Effectiveness has been defined as a measure of the degree to which an item can be expected to achieve a set of specific mission requirements. When effectiveness is applied at the system level, it is called system effectiveness. System effectiveness includes system safety. Relations between applicable effectiveness disciplines are examined. The Army has a system-effectiveness concept which makes it a function of operational readiness, mission reliability, and design adequacy. A concept held by the Navy is also discussed. Conferences concerned with system effectiveness are considered and attention is given to the activities of the AIAA in SES. G.R.

**A75-43591** Law and bureaucracy - The shroud of aviation. P. P. Flynn (Southwestern University, Los Angeles, Calif.). *Journal of Air Law and Commerce*, vol. 41, Winter 1975, p. 1-32. 129 refs.

An investigation is conducted of a very serious challenge which aviation faces today. The condition under examination, called aviation congestion, is the result of the interaction of technology, legislation, regulation, financing, travel demand, flight density, safety, and the status of the national economy. It is pointed out that many of the airport and airways problems stem not only from unprecedented growth, but also from poor planning, and lack of foresight. The key to the solution of the current problem seems to lie in solving the problems of the Air Traffic Control System. G.R.

**A75-43593** An unresolved issue in setting the cost of capital to the U.S. domestic airlines. R. D. Gritta (Santa Clara University, Santa Clara, Calif.). *Journal of Air Law and Commerce*, vol. 41, Winter 1975, p. 65-74. 11 refs.

A determination of the reasonableness of overall fare levels in the case of the domestic airlines involves as part of an estimation of future total costs also an approximation of the cost of capital. A survey is presented of the CAB's approach to specifying the cost of capital, taking into account an important unresolved problem concerning the appropriate capital structure for the industry. It is concluded that the CAB has understated the cost of capital, a key input into total costs to the ten domestic trunklines, by failing to specify correctly the 'optimal' capital structure for the industry. G.R.

**A75-43594** Policy innovations in the Domestic Passenger-Fare Investigation. L. S. Keyes. *Journal of Air Law and Commerce*, vol. 41, Winter 1975, p. 75-100. 44 refs.

The Domestic Passenger-Fare Investigation, a proceeding which had been instituted in January 1970, was completed in March 1974. The investigation led to a number of major innovations in the Civil Aeronautics Board's basic rate-making policy. The innovations are discussed, giving attention to decisions in phases 6B (Load Factor), 5 (Discount Fares), and 9 (Fare Structure). The reasons given by the board for the institution of the regulatory innovations are critically examined. G.R.

**A75-43875** # Indian National Committee for Space Research report to COSPAR. P. D. Bhavsar, S. C. Chakravarty, S. K. Dutta, M. S. Narayanan, and R. S. Rao (Indian Space Research

Organization, Bangalore, India). *COSPAR, Plenary Meeting, 18th, Varna, Bulgaria, May 29-June 7, 1975, Paper*. 69 p. 127 refs.

An overview of present aerospace experimental studies, aerospace projects, and scientific organizations and facilities in India is given, along with a discussion of future plans and a summary of symposia on the space sciences. Topics covered include neutral upper atmospheric studies, ground-based and theoretical studies of the earth's magnetic field and the magnetosphere, solar X-ray flares, satellite geodesy, international cooperation, the earth's near-space environment, some aspects of astrophysics, and future plans for measurement of stratospheric nitric oxide, micropulsation, sounding rocket experiments, X-ray astronomy, and radio beacon studies.

S.J.M.

**A75-44245** A logistics analysis and ranking model /ALARM/. W. L. Davidson and B. J. Landstra (Hughes Aircraft Co., Canoga Park, Calif.). In: *Annual Reliability and Maintainability Symposium*, Washington, D.C., January 28-30, 1975, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1975, p. 538-542.

ALARM is a support cost model useful for the following purposes: computation of life cycle support costs for a system composed of replaceable subassemblies; determination of the most cost effective of alternate design concepts; analysis of the sensitivity of support costs to changes in system design parameters; selection of the most economical of four specified maintenance concepts; identification of the highest cost components and support elements of a system. The model is complete and operational, and has been used effectively in the evaluation of support of a complex airborne avionics system. This model produces life cycle support cost information which is essential for evaluating approaches for maintaining an equipment system. This information is provided in clearly defined reports produced by the model on demand. (Author)

**A75-44246** Warranty procurement - A case history. H. S. Balaban (ARINC Research Corp., Annapolis, Md.) and F. J. Nohmer (USAF, Navigation and Landing System Div., Bedford, Mass.). In: *Annual Reliability and Maintainability Symposium*, Washington, D.C., January 28-30, 1975, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1975, p. 543-548. 8 refs.

A case history concerning the development of a complete warranty provision for the Air Force procurement of the ARN-XXX Tactical Navigation (TACAN) set is presented. Aspects of ARN-XXX warranty applicability are discussed along with the establishment of warranty provisions and the reliability improvement warranty. Attention is given to exclusions, unverified failures, the warranty period, pipeline flow, shipping and inventory control, repair test procedure, operating hour adjustment, government obligations, the MTBF guarantee, and warranty data requirements. G.R.

**A75-44726** # Design, development, and management of the solar probe Helios (Auslegung, Entwicklung und Management der Sonnensonde Helios). G. Scheil and H.-C. Benöhr (Messerschmitt-Bölkow-Blohm GmbH, Munich, West Germany). *Deutsche Gesellschaft für Luft- und Raumfahrt, Symposium über Bedeutung und Ergebnisse des Helios-Raumfahrtprogramms, Munich, West Germany, May 27, 1975, Paper*. 39 p. In German.

An agreement concerning the Helios missions as a bilateral German-American project was reached in 1969. The project involved the development, the construction, the launching, and the operation of two space probes for the study of the interplanetary space near the sun. The missions were to include an approach to the sun to a distance of at least 0.3 AU. The solar probe Helios-A was launched on Dec. 10, 1974. Helios-B is to be launched in December 1975. The scientific objectives of the Helios missions are considered along with the payload, the mission profile, the basic principles of system design, and the characteristics of the subsystems. Attention is given to Helios as an integrated system, the development program, aspects of project planning, and questions of project organization and management.

G.R.

**A75-44728 #** The Helios program and its significance for the Federal Republic of Germany (Das Helios-Programm und seine Bedeutung für die Bundesrepublik Deutschland). H. Strub (Bundesministerium für Forschung und Technologie, Bonn, West Germany). *Deutsche Gesellschaft für Luft- und Raumfahrt, Symposium über Bedeutung und Ergebnisse des Helios-Raumfahrtprogramms, Munich, West Germany, May 27, 1975, Paper. 9 p.* In German.

**A75-45083 #** Prediction of rational time requirements for debugging large control programs (Prognozirovanie ratsional'noi diletel'nosti otladki bol'shikh upravliaushchikh programm). V. V. Lipaev, P. G. Gaganov, and V. N. Prosvirnin. *Upravliaushchie Sistemy i Mashiny*, July-Aug. 1975, p. 8-14. 5 refs. In Russian.

A statistical analysis of the process of debugging large control programs is carried out, and the results obtained are studied. Means of optimizing such debugging and checking processes are proposed.

V.P.

**A75-45825 \*** The Pioneer Projects - Economical exploration of the solar system. J. R. Spahr and C. F. Hall (NASA, Ames Research Center, Moffett Field, Calif.). *International Astronautical Federation, International Astronautical Congress, 26th, Lisbon, Portugal, Sept. 21-27, 1975, Paper A75-002.* 16 p.

The interplanetary Pioneer missions are reviewed in terms of management implications and cost control. The responsibilities, organizational structure, and management practices of the Pioneer Projects are presented. The lines of authority and areas of responsibility of the principal organizational elements supporting the Pioneer missions are identified, and the methods employed for maintaining effective and timely interactions among these elements are indicated. The technical and administrative functions of various organizational elements of the project are described. The management and control of activities prior to and during the hardware procurement phase are described to indicate the basis for obtaining visibility of the technical progress, utilization of resources, and cost performance of the contractors and other institutions supporting the Pioneer projects.

(Author)

**A75-45829** Economic analysis of space-based electric power generation and transmission systems. E. J. Greenblat (ECON, Inc., Princeton, N.J.). *International Astronautical Federation, International Astronautical Congress, 26th, Lisbon, Portugal, Sept. 21-27, 1975, Paper 75-006.* 18 p.

An economic evaluation is conducted of a space solar power station (SSPS) project considered by an American aerospace corporation. Underlying economic considerations for determining the 'cost' of electricity to users from a given power plant are discussed. An economic analysis of the initial program plan is considered along with an analysis of technology choices and the potential economic benefits of an SSPS. On the basis of the reported evaluation it is concluded that the SSPS concept can be regarded as potentially economically viable.

G.R.

**A75-46975** Stage approach for the evaluation and selection of R&D projects. A. Albala (Technion - Israel Institute of Technology, Haifa; Tel Aviv, University, Tel Aviv, Israel). *IEEE Transactions on Engineering Management, vol. EM-22, Nov. 1975, p. 153-164.* 67 refs.

This study discusses the formulation and application of a sequential combined model approach for the evaluation and selection of R&D projects. The conventional R&D areas within a chemical industry are considered. Three successive stages known as exploratory, applied research, and development are identified, with each stage being characterized by clear boundaries, decreasing degree of risk and uncertainty, increasing size of investment, and increasing length of time required for completion of a stage. An implementation model is presented which contemplates for pre-stage evaluation, three go/no-go decision points, and an additional point-of-no-return commercialization decision. The proposed model does not cover general R&D budgeting. An application of the approach to the case of a chemical company is illustrated in three appendices.

S.D.

**A75-47487 \* #** Apollo Soyuz Test Project Weights and Mass Properties Operational Management System. M. A. Collins, Jr. and E. R. Hischke (NASA, Johnson Space Center, Houston, Tex.). *Society of Allied Weight Engineers, Annual Conference, 34th, Seattle, Wash., May 5-7, 1975, Paper 1049.* 28 p.

The Apollo Soyuz Test Project (ASTP) Weights and Mass Properties Operational Management System was established to assure a timely and authoritative method of acquiring, controlling, generating, and disseminating an official set of vehicle weights and mass properties data. This paper provides an overview of the system and its interaction with the various aspects of vehicle and component design, mission planning, hardware and software simulations and verification, and real-time mission support activities. The effect of vehicle configuration, design maturity, and consumables updates is discussed in the context of weight control.

(Author)

**A75-47498** Will design-to-cost work over the long haul. E. H. Johnson and R. H. Nansen (Boeing Design-to-Cost Laboratory, Seattle, Wash.). *Society of Allied Weight Engineers, Annual Conference, 34th, Seattle, Wash., May 5-7, 1975, Paper 1068.* 23 p.

Design-to-cost is now a popular government procurement discipline by means of which future cost effective weapon systems may be acquired. The present paper relates design-to-cost philosophies with real world problems and establishes clear-cut mutual industry/government responsibilities. Significant problem areas which require resolution by both government and industry are outlined.

V.P.

**A75-47499** An integrated approach to value engineering and weight engineering in the Design-To-Cost environment. E. G. Lilley (Bell Helicopter Co., Fort Worth, Tex.). *Society of Allied Weight Engineers, Annual Conference, 34th, Seattle, Wash., May 5-7, 1975, Paper 1069.* 25 p.

The objectives of design-to-cost are discussed, and the role of the weight engineer in solving the total problem of engineering cost control is delineated. The difference between the Engineering Cost Control Group and the Design-to-Cost team is explained with specific references to development of Bell Helicopter's commercial Model 222 to meet target costs and weights.

C.K.D.

**A75-47500** The integrated team - Key to implementing design-to-cost. R. E. Johnston (General Dynamics Corp., Convair Div., San Diego, Calif.). *Society of Allied Weight Engineers, Annual Conference, 34th, Seattle, Wash., May 5-7, 1975, Paper 1070.* 15 p. 11 refs.

A management system is described which appears to provide the framework for successful design-to-cost implementation based on the integrated team approach. Using an integrated project team organization, product design and system development activities are continuously evaluated against cost requirements with emphasis equal to that placed on technical requirements. The design-to-cost plan features evolution of the product design to specified cost targets in discretely planned controlled and fully traceable steps.

V.P.

**A75-47700** A planning model for international air freight. J. Gilbert, N.-C. Sun, and M. Bunamo (Port Authority of New York and New Jersey, New York, N.Y.). *Logistics and Transportation Review, vol. 11, no. 2, 1975, p. 165-175.*

An econometric planning model for expanding international air-cargo volumes is presented which is based on the dimensions and dynamics of the foreign air-cargo market. Two models are described which were developed to analyze New York's foreign air-cargo operations. It is shown that analysis of the complete system makes it possible to plan the ground-access systems needed to accommodate air cargo and to estimate future air-freight volumes.

F.G.M.

**A75-47802 \* #** Plans and status of the NASA-Lewis Research Center wind energy project. R. Thomas, R. Puthoff, J. Savino, and W. Johnson (NASA, Lewis Research Center, Cleveland, Ohio). *Institute of Electrical and Electronics Engineers and American*

*Society of Mechanical Engineers, Joint Power Conference, Portland, Ore., Sept. 28-Oct. 1, 1975, Paper. 30 p. 8 refs.*

This report describes that portion of the national five-year wind energy program that is being managed by the NASA-Lewis Research Center for the ERDA. The Lewis Research Center's Wind Power Office, its organization and plans and status are briefly described. The three major elements of the wind energy project at Lewis are the experimental 100 kW wind-turbine generator; the first generation industry-built and user-operated wind turbine generators; and the supporting research and technology tasks which are each briefly described. (Author)

## STAR ENTRIES

**N75-10137\***# National Aeronautics and Space Administration, Washington, D.C.

**SPACELAB PROGRAM REQUIREMENTS, LEVEL 1**

26 Sep. 1974 27 p

(NASA-TM-X-72031; NASA-MF-74-1; ESRO-SL-74-1) Avail: NTIS HC \$3.75 CSCL 22A

The design and development of Spacelab is reported including the ground support equipment, facilities, and operational planning. The shuttle interface, and user requirements are discussed along with product assurance and safety. F.O.S.

**N75-10269\***# Bendix Corp., Kansas City, Mo.

**AUTOMATED SCHEDULING OF MANUFACTURING RESOURCES** Technological Spinoff Report

W. G. Hoppen Mar. 1974 26 p refs

(Contract AT(29-1)-613)

(BDX-613-1077) Avail: NTIS HC \$3.75

To effectively utilize manpower, equipment, and facilities in production, two major factors must be known: the current inprocess status of product and the required date for the finished product. By automatically computing production and inspection hours and comparing the results to required dates and resource capacities, it is possible to provide a daily priority plan for every production load center. The automated process characterizations and control techniques are given that provide a five-day finite plan for 100 percent of the capacity of each load center in a manufacturing operation producing mechanical and electronic assemblies under contract for the U. S. Government and involving approximately 13,000 active part numbers.

Author (NSA)

**N75-10522\***# California Univ., Berkeley. Lawrence Berkeley Lab.

**RESEARCH HIGHLIGHTS 1974 FISCAL**

Sep. 1974 64 p refs

(Contract W-7405-eng-48)

(Publ-84/7M) Avail: NTIS HC \$4.25

Activities at the University of California Lawrence Berkeley Laboratory are fully described, and are accompanied by photographs which illustrate the most important developments in the following areas: (1) air pollution control; (2) catalytic surfaces; (3) ozone effects of the supersonic transport aircraft; (4) geothermal power conversion; (5) medical research on Fanconi's Anemia, cancer cell metabolism, and nuclear medicine; (6) positron-electron-proton accelerator and SuperHILAC accelerator design; and (7) physics experiments on baryon resonances, helium-like atoms, spin effects, and high energy carbon reactions. Tables are also provided which show summary figures for annual manpower and financial data. A.A.D.

**N75-10549\***# National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, Md.

**THIRD EARTH RESOURCES TECHNOLOGY SATELLITE SYMPOSIUM, VOLUME 2: SUMMARY OF RESULTS**

Stanley C. Freden, ed., Enrico P. Mercanti, ed., and David B. Friedman, ed. Washington May 1974 184 p refs Symp. held at Washington, D. C. 10-14 Dec. 1973 Original contains color illustrations

(NASA-SP-356) Avail: NTIS MF \$2.25; SOD HC \$3.00 CSCL 05B

Summaries are provided of significant results taken from presentations at the symposium along with some typical examples of the applications of ERTS-1 data for solving resources management problems at the national, state, and local levels.

**N75-10594\***# California Univ., Livermore. Lawrence Livermore Lab.

**RATIONALE FOR SETTING PRIORITIES FOR NEW ENERGY TECHNOLOGY RESEARCH AND DEVELOPMENT**

B. Rubin, S. Winter, W. Ramsey, and G. Werth 4 Jan. 1974

60 p refs

(Contract W-7405-Eng-48)

(UCRL-51511) Avail: NTIS HC \$4.25

A strategy for employing new technologies to meet United States energy shortages by 1985, including a set of ground rules for choosing among different technologies, is presented. Twenty-five technology areas are indicated, each of which meets the ground rules and is potentially capable of providing at least  $0.5 \times 10$  to the 15th power Btu/yr by 1985. Source energy prices and 1985 energy production quantities are estimated. Total R and D costs are estimated to be \$5.7 billion; total production plant capital costs would be about \$73 billion. Relative values of different technologies are compared on the basis of city-gate energy prices. Development of these technologies would approximately double the commercially-available fossil fuel reserves, assuming an energy price increase (in 1973 dollars) of about 30% over 1973 prices. Nonfossil reserves also would be greatly increased. Addition of the energy supplies produced by these new technologies to the supplies derived through conventional means could lead to self-sufficiency in energy by the mid-1980's.

Author (NSA)

**N75-10854\***# Committee on Ways and Means (U. S. Senate).

**THIRD ANNUAL REPORT ON THE FINANCIAL CONDITION AND RESULTS OF THE OPERATION OF THE AIRPORT AND AIRWAY TRUST FUND** Annual Report of the Dept. of the Treasury to the Congress of the United States

John K. Carllock Washington GPO 1974 11 p Presented to the Comm. on Ways and Means, 93d Congr., 2d Sess., 30 Jun. 1973 Prepared by the Dept. of the Treasury

(H-Doc-93-230; GPO-29-552; AR-3) Avail: US Capitol, House Document Room

A Congressional hearing was conducted to determine the financial condition and results of the operation of the airport and airway trust fund. The report contains comment on the highlights of the fund, data on current and prior year operations and financial condition, and estimated data for the following fiscal years. Supporting statements include annual and cumulative data on the basis of existing legislation for each fiscal year through fiscal 1978.

Author

**N75-10855\***# Committee on Interior and Insular Affairs (U. S. Senate).

**MARKET PERFORMANCE AND COMPETITION IN THE PETROLEUM INDUSTRY, PART 2**

Washington GPO 1974 335 p refs Hearings on S. Res. 45 before Comm. on Interior and Insular Affairs, 93d Congr., 1st Sess., 5-6 Dec. 1973

(GPO-28-740) Avail: Comm. on Interior and Insular Affairs

Financial statements by numerous large utility and oil companies were submitted to Congress, along with individual assessments of the oil shortage situation and its effect on market performance and competition. Alternative sources of energy, particularly that of nuclear electric power, are discussed in terms of current annual capital expenditures experienced by operational plants, as well as projected costs for more widespread nuclear power utility. Other statistical data are included for production capability forecasts and profit expectations for companies within the energy sector.

A.A.D.

**N75-11448\***# Bendix Corp., Kansas City, Mo.

**RESOURCES FORECASTING SYSTEM** Technological Spinoff Report

J. J. Kolich Mar. 1974 43 p  
(Contract AT(29-1)-613)

(BDX-613-1078) Avail: NTIS HC \$3.75

A system is described for use by management in forecasting the manpower, machines, material, tools, gages, test equipment, and floor space required to support current schedules and planned or contemplated production. An automated Resources Forecasting System (RFS) is now being used in a manufacturing operation involving 2400 products, representing 25,000 different parts and 175,000 production operations. The system is applied to product categories including electrical and electronic, plastics and rubber, mechanical, and electromechanical. All customer order requirements are consolidated into piece part or assembly schedules for production and procurement activities; completed piece parts and assemblies are then allocated to customer orders on a shipment priority basis. The system is designed to accommodate multiple product definitions and changing schedule requirements. It reduced the time required to produce manpower and machine forecasts for budgeting exercises from 36 to 10 days, and for monthly forecasts from 23 to 5 days. The period which can be forecasted was extended from 2-1/2 years to 10 years. Author

**N75-11691#** Washington Univ., St. Louis, Mo. Computer Systems Lab.

**MACROMODULAR COMPUTER DESIGN. PART 1: DEVELOPMENT OF MACROMODULES. VOLUME 5: LABORATORY PERSONNEL AND BIBLIOGRAPHY** Final Report, 1 Apr. 1965 - 1 Dec. 1973

Christine D. Coaker Feb. 1974 75 p refs

(Contract ARPA SD-302; Grant RR-00396)

(AD-783875; TR-48) Avail: NTIS CSCL 09/2

The volume gives names and titles of all personnel associated with the Macromodular Computer Design project. Titles, authors, dates and abstracts of relevant technical reports and Technical Memoranda originating during this period are given, as well as a bibliography of related Washington University theses and dissertations and of publications in the open literature. (Modified author abstract) GRA

**N75-11800\*** George Washington Univ., Washington, D.C. Program of Policy Studies in Science and Technology.

**OUTPUT ORIENTATION IN R AND D: A BETTER APPROACH?**

Guy Black May 1974 24 p refs Sponsored in part by NSF (Grant NGL-09-010-030)

(NASA-CR-140677; Mono-22) Avail: NTIS HC \$3.25 CSCL 05A

Research and development management is examined as it might be performed under an output-oriented approach in which the company's needs for innovations in various product and production areas were identified. It is shown that a company's R and D program is the aggregate of its needs in various areas of its business. The planning, programming and budgeting approach is applied to R and D. The state of theory on R and D decision making in economics is summarized. Abstracts of articles concerning R and D in industry are included. Author

**N75-11802#** Logistics Management Inst., Washington, D.C. **A REVIEW OF GENERAL ACCOUNTING OFFICE DECISIONS ON LIFE CYCLE COSTING**

Jun. 1974 119 p refs

(Contract ARPA SD-321)

(AD-783932/7; LMI-74-4) Avail: NTIS HC \$5.25

GAO decisions and reports through 1973 which impact the application of life cycle costing procedures on Government procurements are summarized, and 35 specific decisions and reports are abstracted and reviewed. Cross-references and indexes by subject area are also provided. Author (GRA)

**N75-11923#** Mitre Corp., McLean, Va..

**AN ADVANCED AIR TRAFFIC MANAGEMENT CONCEPT BASED ON EXTENSIONS OF THE UPGRADED THIRD**

**GENERATION ATC SYSTEM. SYSTEM B: ATC AUTOMATION ANALYSIS**

A. N. Sinha Feb. 1974 65 p refs

(Contract DOT-FAT0WA-2448)

(AD-785312; MTR-6419-Ser-7; FAA-EM-73-10A-Ser-7) Avail: NTIS CSCL 17/7

The AATMS study was initiated in an effort to evaluate various concepts of fourth generation air traffic control in the 1995 era. This report discusses the ATC automation requirements of the control center configurations of an upgraded third generation ATC system. Computer sizing estimates are presented for all the control centers in the System B 1995 configuration. Cost estimates, in current dollars, for the computer systems, based on existing technology, are also presented. GRA

**N75-11924#** Mitre Corp., McLean, Va.

**AN ADVANCED AIR TRAFFIC MANAGEMENT CONCEPT BASED ON EXTENSIONS OF THE UPGRADED THIRD GENERATION ATC SYSTEM. SYSTEM B: SYSTEM COST ANALYSIS**

A. N. Sinha Sep. 1973 64 p refs

(Contract DOT-FAT0WA-2448)

(AD-785313; MTR-6419-Ser-8; FAA-EM-73-10A-Ser-8) Avail: NTIS CSCL 17/7

The AATMS study was initiated to evaluate various concepts of fourth generation air traffic control in the 1995 era. The purpose was to aid in the long-range planning of research and development, and to identify areas that appear the most promising for early preparation for the fourth generation. The report discusses the system cost analysis of an extension of the upgraded third generation ATC system. Cost estimates are presented for the surveillance, communications, and navigation subsystems as well as for the control centers and controller staffing. GRA

**N75-11926#** Mitre Corp., McLean, Va.

**AN ADVANCED AIR TRAFFIC MANAGEMENT CONCEPT BASED ON EXTENSIONS OF THE UPGRADED THIRD GENERATION ATC SYSTEM. SYSTEM B: 1995 LOS ANGELES BASIN TRAFFIC MODEL, VOLUME 1**

A. D. Mundra Mar. 1974 90 p refs

(Contract DOT-FAT0WA-2448)

(AD-785309; MTR-6419-Ser-4-Vol-1;

FAA-EM-73-10A-Ser-4-Vol-1) Avail: NTIS CSCL 17/7

A model of air traffic in the Los Angeles basin for the 1995 time frame is developed in this document. Details of annual operations demand projections for the basin including a distribution of loads over airports are provided. This demand is then translated into a typical peak instant traffic picture (snapshot of the airspace) and estimates of the busy hub hour loads for airports. The snapshot is summarized for various characteristics such as user type, flight type, altitude distributions and speed distributions. GRA

**N75-11927#** Mitre Corp., McLean, Va.

**AN ADVANCED AIR TRAFFIC MANAGEMENT CONCEPT BASED ON EXTENSIONS OF THE UPGRADED THIRD GENERATION ATC SYSTEM. SYSTEM B: 1995 LOS ANGELES BASIN TRAFFIC MODEL, VOLUME 2**

A. D. Mundra Mar. 1974 128 p

(Contract DOT-FAT0WA-2448)

(AD-785310; MTR-6419-Ser-4-Vol-2;

FAA-EM-73-10A-Ser-4-Vol-2) Avail: NTIS CSCL 17/7

The volume contains the complete set of arrival/departure matrices and its supporting data, used for the generation of the snapshot of Los Angeles 1995 airspace (Appendix B). This snapshot is listed in its entirety (Appendix C). Also included are summary statistics on the snapshot in the form of density maps of the basin by altitude bands and detailed altitude and speed statistics for important flight categories (Appendix D). GRA

**N75-11928#** Mitre Corp., McLean, Va.

**AN ADVANCED AIR TRAFFIC MANAGEMENT CONCEPT BASED ON EXTENSIONS OF THE UPGRADED THIRD GENERATION ATC SYSTEM. SYSTEM B: AIR TRAFFIC ACTIVITY PROJECTIONS FOR 1995**

D. Goldman Mar. 1974 89 p

(Contract DOT-FA70WA-2448)  
 (AD-785308; MTR-6419-Ser-3; FAA-EM-73-10A-Ser-3) Avail:  
 NTIS CSCL 17/7

The report describes a set of projected 1995 air traffic activity data for use in evaluation of advanced air traffic management system concepts. Included in the projections are the aircraft fleets and operations rates for the air carrier, general aviation and military markets. Airport activity rates are estimated on an annual basis and instantaneous airborne counts are developed for a typical peak period.

GRA

**N75-11981# Research Inst. of National Defence, Stockholm (Sweden).**

**FUTURE SCIENTIFIC RESEARCH: THE ELITES NEW LATIN OR A NEW NAME FOR SOME OLD WAYS OF THINKING [FRAMTIDSFORSKNING: ELITENS NYA LATIN ELLER ETT NYTT NAMN FOER NAGRA GAMLA SAETT ATT TAENKA]**  
 Stephen Schwarz Jan. 1973 27 p refs In SWEDISH  
 (FOA-P-C-8347-M5) Avail: NTIS HC \$3.75 CSCL 20A

Some critical points of view and ideas are put forward to illustrate the role of future scientific research as an element in the solution of the problem of responsibility in the process of decision making.

Author

**N75-12427# Federal Energy Administration, Washington, D.C. PROJECT INDEPENDENCE: A SUMMARY**

Nov. 1974 113 p refs  
 Avail: SOD HC \$2.00

An evaluation of the U.S. energy problem is presented which assesses the 'base case' situation through 1985 and evaluates the impacts and implications of a wide range of major energy policy alternatives, including the strategic options available to the U.S. of increasing domestic energy supply, conserving and managing energy demand, and establishing standby emergency programs. The strategies are evaluated in terms of their impact on the following variables: (1) development of alternative energy sources; (2) vulnerability to import disruptions; (3) economic growth, inflation, and unemployment; (4) environmental effects; and (5) regional and social impacts. The study provides the analytical and factual basis for focusing debate on the inherent choices and tradeoffs, and for selecting a national energy policy.

Author

**N75-12428# Federal Energy Administration, Washington, D.C. PROJECT INDEPENDENCE**

Nov. 1974 788 p refs  
 Avail: SOD HC \$8.35

For abstract, see N75-12427.

**N75-12432# Guyol (Nathaniel B.), San Rafael, Calif. THE APPROACHING ENERGY CRISIS: A CALL FOR ACTION**

Nathaniel B. Guyol 1974 13 p  
 Avail: NTIS HC \$3.25

The energy crisis is not a crisis but a two phase threat to our energy supplies. In the first phase, it is a threat of physical shortages and very high prices on certain petroleum products in the months immediately ahead. In the second phase it is a threat of physical shortages and very high prices on both oil and natural gas in the years ahead. Import requirements could be reduced by: (1) opening up the Elk Hills Naval Reserve; (2) ordering a one-third reduction in military use of oil; (3) reducing aviation fuel requirements by consolidating flights and schedules on competing airlines; (4) reconverting certain oil burning power plants to coal fuel. Together, these four measures alone could cut a million barrels per day from our import requirements in a period of only a few months.

Author

**N75-12635# Research Inst. of National Defence, Stockholm (Sweden).**

**INTRODUCTION TO LECO [INTRODUKTION TILL LECO]**  
 Jacob Palme Mar. 1973 18 p refs In SWEDISH  
 (FOA-P-C-8355-M3(E5)) Avail: NTIS HC \$3.25

LECO is a program for IBM 360/370 which facilitates the management of basic programs and other texts stored on memory discs. LECO enables the texts to be stored in very compact form - the space needed being only one quarter the size of the original amount of text. It is very convenient, with the help of LECO to introduce alterations at arbitrary places in the stored text. The text can, via LECO be transferred to compilers or other programs which will produce the text. This introduction gives enough information for the reader to begin using LECO. The instructions are not intended to give complete description of all the possibilities of LECO.

Author

**N75-12842# Houston Univ., Tex. Dept. of Physics. A STUDY OF THE OPERATION OF SELECTED NATIONAL RESEARCH FACILITIES**

Melvin Eisner 1974 70 p  
 (Contract NAS9-12692)

Avail: NTIS HC \$4.25 CSCL 05A

The operation of national research facilities was studied. Conclusions of the study show that a strong resident scientific staff is required for successful facility operation. No unique scheme of scientific management is revealed except for the obvious fact that the management must be responsive to the users needs and requirements. Users groups provide a convenient channel through which these needs and requirements are communicated.

Author

**N75-12844# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.**

**SOME CONSEQUENCES OF RAPID MANAGERIAL SUCCESSION IN COMPLEX ORGANIZATIONS: A VALIDATION STUDY M.S. Thesis**

William R. Bennett and James S. Childress Aug. 1974 127 p refs

(AD-785442; SLSR-6-74B) Avail: NTIS CSCL 05/9

Managerial succession, or the process by which managers come and go in a large organization, is thought to have significant effects on both the organization and on the attitudes of the managers involved. Previous research indicated that one set of attitudes affected by the managerial succession process is that set concerning organizational identification, or the degree to which the manager incorporates into his identity important organizational beliefs, attitudes, and values. Prior research had concluded that these attitudes of identification were affected by differences in tenure (length of time) in the organization or subunit, and differences in rates of succession (indicative of mobility). The objective of this research was to determine if such relationships held true in a population consisting of company-grade aircraft maintenance officers serving at squadron level in selected major commands. Attitudes of identification were measured with the Air Force, with the major command, and with the squadron of assignment. (Modified author abstract)

GRA

**N75-12846# Defense Documentation Center, Alexandria, Va. PERSONNEL MANAGEMENT Report Bibliography, Jan. 1967 - Apr. 1974**

Sep. 1974 481 p refs

(AD-785350; DDC-TAS-74-29) Avail: NTIS CSCL 05/9

The abstracts provide information emphasizing management planning and control, policies, decision making, job analysis, scheduling, selection, training, retraining, recruiting, leadership, manpower utilization, and motivation in personnel management. They also include pertinent information on the psychological aspects of human performance in behavior styles, attitudes and values in personnel management. Four computer generated indexes are included.

Author (GRA)

**N75-12849# Research Inst. of National Defence, Sundbyberg (Sweden).**

**NORD DATA 72 AT HELSINKI, JUNE 1972 [NORDDATA 72 I HELSINGFOR 14 - 16 JUNI 1972]**

Karl-Hugo Eriksson, Eva Koenberg, and Bjoern Skoeldstroem Jan. 1973 42 p refs In SWEDISH  
 (FOA-1-C-1496-M4) Avail: NTIS HC \$3.75

Brief descriptions of lectures given at the conference arranged by the Finnish Data Society of the Nordic Data Union at Helsinki are represented. Topics cover: (1) current data processing; (2) data processing for the public sectors; and (3) data processing methods and technologies.  
Transl. by G.G.

**N75-12853#** Research Inst. of National Defence, Stockholm (Sweden).

**DESCRIPTION OF SOME EXPERIMENTAL METHODS WITH ADAPTIVE PLANNING [BESKRIVNING AV NAGRA METODOERSOEK MED ADAPTIV PLANERING]**

Svante Holgersson Oct. 1972 50 p In SWEDISH  
(FOA-P-C-8339-M3) Avail: NTIS HC \$3.75

A series of trial methods with adaptive planning are carried out with the help of a model for budget simulation, the so called Army costing model. An imaginary army is used as the planning object. The tests are designed to record the results graphically. It is shown that it is possible to give a description of how freedom of action is affected when one applies different grades of adaptive planning. The development of freedom of action can also be shown to depend on the directing organization after the planning period has begun. Some complimentary tests show how the costs for an increasing degree of adaptive planning can be described. Further investigations are made into a method of explicitly taking account of different possibilities for alternative army combinations, should the need become a reality.  
Author

**N75-12854#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**AN EXPLORATION INTO THE PRACTICES OF DCAS INDUSTRIAL SPECIALISTS IN OBTAINING CONTRACTOR PRODUCTION INFORMATION ON HIGH PRIORITY, MEDIUM VALUE CONTRACTS**

James A. Engan and Robert E. Hergenroeder Aug. 1974 137 p refs  
(AD-785441; SLSR-28-74B) Avail: NTIS CSCL 15/5

There are well-defined procedures for monitoring high priority, high value contracts, but no standard procedure for monitoring high priority, medium value contracts (\$2500 -C/SCSC threshold). This study addresses the processes and methods used to conduct contract surveillance on high priority, medium value contracts. The study explored (1) the problems perceived by DCAS Industrial Specialists (ISs) that hinder their obtaining contractor production data, (2) what contractor production data is normally obtained by DCAS ISs, and (3) what data items are perceived by DCAS ISs as being available. (Modified author abstract)  
GRA

**N75-12928#** Autonetics, Anaheim, Calif.

**CONCEPT FOR A SATELLITE-BASED ADVANCED AIR TRAFFIC MANAGEMENT SYSTEM. VOLUME 3: OPERATIONAL LOGIC FLOW DIAGRAMS FOR A GENERIC ADVANCED AIR TRAFFIC MANAGEMENT SYSTEM** Final Report, Oct. 1972 - Oct. 1973

C. V. Hamilton, C. S. Hoffman, J. B. King, and R. J. Knight Feb. 1974 181 p  
(Contract DOT-TSC-508)  
(PB-234271/5; DOT-TSC-OST-73-29-8-Vol-3) Avail: NTIS HC \$7.00 CSCL 17G

A description is presented of the services a generic advanced air traffic management system (AATMS) should provide to the users of the system to facilitate the safe, efficient flow of traffic. It provides a definition of the functions which the system must perform to provide these services and relates them to the various phases or segments of flight encountered in a general flight profile. A series of detailed operational logic flow diagrams, which specify individual tasks or activities which must be accomplished to complete each function, are also presented. These flow diagrams were generated as an aid in the development of a digital simulation of an AATMS. They are required as a basis for subsystem mechanization and for the analysis of system implementations.  
GRA

**N75-13535\*** ILC Industries, Inc., Dover, Del.  
**APOLLO/SKYLAB SUIT PROGRAM-MANAGEMENT SYSTEMS STUDY, VOLUME 1**  
M. McNiff 30 Apr. 1974 254 p  
(Contract NAS9-6100)  
(NASA-CR-140368; SES-074-101-Vol-1) Avail: NTIS HC \$8.50 CSCL 06K

A management systems study for future spacesuit programs was conducted to assess past suit program requirements and management systems in addition to new and modified systems in order to identify the most cost effective methods for use during future spacesuit programs. The effort and its findings concerned the development and production of all hardware ranging from crew protective gear to total launch vehicles. Author

**N75-13675#** Bendix Corp., Kansas City, Mo.  
**WORKING-IN-PROCESS INVENTORY CONTROL**  
M. J. Kepner May 1974 25 p refs Presented at the Inventory Control Seminar, Teterboro, N.J., 21 May 1974  
(Contract AT(29-1)-613)

(BDX-613-1145; Conf-740542-1) Avail: NTIS HC \$3.25  
The efficient scheduling of important and costly productive resources, including machines, material, tooling, and personnel, is essential if schedules are to be met and costs are to be controlled. A comprehensive production control and inventory management system is described that includes these vital capabilities. The work-in-process portion of the total system provides the basic information necessary to achieve a high degree of control over shop scheduling and the allocation of productive resources. Important benefits include a reduction in the number of production control and manufacturing personnel, a significant reduction in overtime utilization, an improved schedule performance, and the elimination of an annual plant shutdown for physical inventory.  
Author

**N75-13682#** National Science Foundation, Washington, D.C.  
**AN ANALYSIS OF FEDERAL R AND D FUNDING BY FUNCTION, FISCAL YEARS 1969 - 1975**  
Aug. 1974 79 p  
(NSF-74-313) Avail: SOD HC \$2.25

Federal support of research and development programs in terms of selected national purposes or functions is measured. Relative research and development priorities are shown by using a system in which each program is assigned to only one function, with no overlapping, and using at the same time a function list that covers all leading national interests to which research and development activities are applicable.  
Author

**N75-13847#** Autonetics, Anaheim, Calif.  
**CONCEPT FOR A SATELLITE-BASED ADVANCED AIR TRAFFIC MANAGEMENT SYSTEM. VOLUME 6: DEVELOPMENT AND TRANSITION PLANS** Final Report, Oct. 1972 - Oct. 1973

H. T. Freedman, W. R. Fried, C. S. Hoffman, J. B. King, and C. V. Hamilton Feb. 1974 114 p refs 10 Vol.  
(Contract DOT-TSC-508)  
(PB-234269/9; DOT-TSC-OST-73-29-6-Vol-6) Avail: NTIS HC \$5.25; HC also available from NTIS \$37.00/set of 10 reports as PB-234263-SET CSCL 17G

The volume presents the plans for implementing the Satellite-Based Advanced Air Traffic Management System (SAATMS) described in Volumes II, III, and IV. Two plans are presented: an RDT and E plan and a transition plan. The RDT and E plan is presented as a series of task descriptions which delineate the activities that must be performed to generate requirements and to develop the hardware and software that comprise the various components of the system. The plan also describes those management tasks necessary to document and control the orderly development of the system. Development schedules and associated costs are also presented.  
Author (GRA)

**N75-14187\*** Cornell Univ., Ithaca, N.Y. Dept. of Natural Resources  
**EVALUATION OF SKYLAB IMAGERY AS AN INFORMATION**

**SERVICE FOR INVESTIGATING LAND USE AND NATURAL RESOURCES Progress Report, Nov. 1974**  
 Ernest E. Hardy, Principal Investigator 30 Nov. 1974 1 p  
 EREP  
 (Contract NAS9-13364)  
 (E75-10068; NASA-CR-141022) Avail: NTIS HC \$3.25 CSCL 05B

**N75-14259#** Army Foreign Science and Technology Center, Charlottesville, Va.

**SCIENTIFIC RESEARCH AND EXPERIMENTAL DESIGN PLANNING AND COORDINATION FOR 1973**

A. E. Sitalov 15 Apr. 1974 7 p Transl. into ENGLISH from Geodez. i Kartograf. (Moscow), no. 2, Feb. 1973 p 72-74  
 (AD-785998; FSTC-HT-23-0158-74) Avail: NTIS CSCL 08B

The report gives the results of a meeting discussing coordination of plans and projects in geodesy, aerial photography and cartography. New techniques, instruments and cooperation are introduced for 1973 to increase the efficiency of work done by the geodetic service. The topographical, geodetic and cartographic services are now part of the Scientific and Technical Mining Society.

GRA

**N75-14488#** Joint Publications Research Service, Arlington, Va.

**TRANSLATIONS ON EASTERN EUROPE: SCIENTIFIC AFFAIRS, NO. 444**

13 Dec. 1974 20 p refs Transl. into ENGLISH from Eastern European reports

(JPRS-63664) Avail: NTIS HC \$3.25

Articles dealing with development and progress in various theoretical and applied scientific disciplines and technical fields of East Europe are reported. The data also deals with the administration, structure, personnel, and research plans of leading East European scientific organizations and institutions, particularly the academies of sciences.

Author

**N75-14633\*** Tennessee Univ. Space Inst., Tullahoma.

**MANAGEMENT PHILOSOPHIES AS APPLIED TO MAJOR NASA PROGRAMS**

Konrad K. Dannenberg Oct. 1974 94 p refs  
 (Grant NGR-43-001-116)

Avail: NTIS HC \$4.75 CSCL 05A

A definition of 'management philosophies' is discussed explaining the position of NASA in the planning and control of space programs and technology. The impact of these philosophies on the Apollo and Saturn 1 programs are described along with the need for the Saturn 5 spacecraft and launch site development. Case studies are included and describe unscheduled events where management decisions were necessary to keep programs on track.

M.C.F.

**N75-14711#** Advisory Group for Aerospace Research and Development, Paris (France).

**THE PERKINS-GLASSER LECTURES, MARCH 1974**

Sep. 1974 27 p In ENGLISH; partly in FRENCH

(AGARD-Highlights-74/2) Avail: NTIS HC \$3.75

An address to the Advisory Group for Aerospace Research and Development (AGARD) which was delivered in September, 1974 is presented. The subject of the address is the Impact of Research and Development on the United States Air Force. Some of the topics considered in the address are: (1) the National support of research, (2) basic and applied research in the Air Force, (3) development of inertial guidance systems, and (4) development of electronic digital computer. Areas of interest involved the methods for funding research and development activities and the process for making new technology available to industry.

Author

**N75-14966#** Gulf General Atomic, San Diego, Calif.

**MANUFACTURING PLAN ERTG RING CONVERTER Final Status Report**

1 May 1974 85 p refs

(Contract AT(04-3)-943)

(GA-A-12914) Avail: NTIS HC \$4.75

This Manufacturing Plan covers the control of all purchases of materials and the manufacture of all components and assemblies for the RING converter for the economical radioisotope thermoelectric generator (ERTG). The plan covers the time span from the approval of engineering drawings through the manufacture of hardware. All manufactured parts and assemblies, from the release of engineering drawings through the manufacture of the RING converter, will be controlled by manufacturing control documents and by quality assurance. This plan is a revision of the TRANSIT plan (GACD-9684) and has been modified to fit the RING converter. A considerable number of tasks and requirements of TRANSIT are directly applicable to the fabrication of the RING converter. Those items in the TRANSIT plan not applicable to the RING were removed, while other new or unique items were added. Appendix A lists the equipment needed for the RING converter fabrication. Appendix B presents the development status of materials, processes and testing.

Author (NSA)

**N75-15388#** RAND Corp., Santa Monica, Calif.

**DELPHI ASSESSMENT: EXPERT OPINION, FORECASTING, AND GROUP PROCESS**

H. Sackman Apr. 1974 125 p

(Contract F44620-73-C-0011)

(AD-786878; R-1283-PR) Avail: NTIS CSCL 12/1

A critical analysis of the delphi technique is presented in four parts. (1) The scope of the inquiry is defined, and issues pertinent to an evaluation of delphi are raised. (2) Conventional delphi is evaluated against established professional standards for opinion questionnaires, and against associated scientific standards for experimentation with human subjects. (3) Delphi is evaluated with respect to its assumptions, principles, and methodology. (4) Conclusions of the analysis are brought together and recommendations are made for future use of delphi.

Author (GRA)

**N75-15495#** Army Foreign Science and Technology Center, Charlottesville, Va.

**SCIENCE SYSTEM MANAGEMENT**

G. Dobrov 19 Mar. 1974 8 p Transl. into ENGLISH from Nauka i Tekhn. (Riga), no. 8, 1972 p 33-36

(AD-786103; FSTC-HT-23-114-74) Avail: NTIS CSCL 08/1

Modern methods of management are essential for raising the effectiveness of scientific activity. Such management should be an organic part of a total system with clear lines of authority and a reliable flow of data between levels. Rational decision making depends on analysis, diagnosis and prognosis and aims at coordination of goal selection, work program determination and resource allocation. Models of science as a managed system may focus on informational, organizational and economic variables. Cybernetics and quantitative measures of performance are important tools for science management.

GRA

**N75-15499#** Office of the Chief of Research and Development (Army), Washington, D.C.

**PROCEEDINGS OF THE 1974 ARMY SCIENCE CONFERENCE. VOLUME 1: PRINCIPAL AUTHORS A THROUGH H**

26 Aug. 1974 475 p refs Presented at the 1974 Army Sci. Conf., West Point, N. Y., 18-21 Jun. 1974

(AD-785600) Avail: NTIS CSCL 05/2

This is Volume I of the 1974 Army Science Conference Proceedings. This volume contains the unclassified papers by principal authors A thru H which were presented at the conference, 18-21 June 1974. U.S. Military Academy, West Point, New York.

GRA

**N75-15507#** Committee on Public Works (U. S. Senate).

**TRANSPORTATION PLANNING AND PRIORITIES FOR THE SEVENTIES: UNIFIED TRANSPORTATION ASSISTANCE**

**ACT OF 1974, PART 2**

Washington GPO 1974 181 p refs Hearing on S. 3035 before Subcomm. on Transportation of Comm. on Public Works, 93 Cong., 2d Sess., 12 Mar. 1974  
(GPO-31-576) Avail: Subcomm. on Transportation

Urban mass transit, the energy shortage, and highway finance are discussed by the Subcommittee on Transportation, New York, N.Y. M.C.F.

**N75-15556 California Univ., San Diego. Dept. of Physics.  
HOW TO USE LARGE OPTICAL TELESCOPES TO THE  
FULLEST EXTENT**

G. R. Burbidge *In* European Southern Obs. Res. Programmes for the New Large Telescopes Jul. 1974 p 363-369

Explosive growth of astronomy and extensive building of large telescopes in good astronomical sites are described along with the increasing development of sophisticated auxiliary equipment. Problem areas in scientific management are considered. Among these are compatible allocation of observing time between short, and long term projects; number of permanent, semi-permanent, and visiting staff; and how far international politics should be allowed to impinge on the choice of scientific projects, and how the advisory committee should be selected. ESRO

**N75-15557 Cornell-Sydney Univ. Astronomy Center, Sydney (Australia).**

**CONSIDERATIONS FOR ALLOCATION OF TELESCOPE TIME**

R. R. Shobbrook *In* European Southern Obs. Res. Programmes for the New Large Telescopes Jul. 1974 p 371-372

The basis for the scheduling of the Australian share of time on the Anglo - Australian 3.8 m telescope is described. Time sharing and half night scheduling, joint programs to minimize duplication of data, routine calibration of all photographs and spectra, and flexibility of programs according to night quality are discussed for the most efficient use of the telescope. ESRO

**N75-15558 Australian National Univ., Canberra. Mount Stromlo and Siding Spring Observatory**

**SCHEDULING TELESCOPES WITH VERY MANY USERS**  
K. C. Freeman *In* European Southern Obs. Res. Programmes for the New Large Telescopes Jul. 1974 p 373-374

A two stream scheduling system requiring a small number of permanent staff is proposed for large telescopes with a large number of potential users. Stream one is for astronomers who want to conduct their own observations. Stream two is devised for astronomers who are prepared to have their observations made by the permanent observer service, in this case time would be allotted in hours and full details of program and priorities given to the observer service, which assembles all its jobs and executes them on a time sharing basis under appropriate sky conditions and in the astronomers absence. ESRO

**N75-15559 Arizona Univ., Tucson. Steward Observatory.**

**ORGANIZATION OF TELESCOPE USE**

P. A. Strittmatter *In* European Southern Obs. Res. Programmes for the New Large Telescopes Jul. 1974 p 375-379

Personnel problems in astronomical observatories are discussed. A staff of resident or near resident astronomers is required if the instrumentation is to be maintained. Terms of appointment at the observatory for resident and visiting staff are featured. A committee of astronomers is required for suggesting time allocation to visitors. Programs fall mainly into three categories: service, directed, and statistical. Although instrument assistants are now indispensable, the astronomers' presence during most observing time is highly advisable. ESRO

**N75-15590# National Academy of Engineering, Washington, D.C.**

**PRIORITIES FOR RESEARCH APPLICABLE TO NATIONAL NEEDS**

1973 142 p

Avail: NTIS HC \$5.75

Research Applied to National Needs (RANN) is discussed in a broad study and review of problem oriented research priorities. Common themes, procedures, and strategies are presented which describe the origins of the RANN program, along with principal objectives for understanding and improving institutional and technical techniques. Also discussed are research recommendations in the area of community development and human resources.

M.C.F.

**N75-15672# RAND Corp., Santa Monica, Calif.**

**AN EXPERIMENTAL INVESTIGATION OF PRIORITY DISPATCHING IN AIRCRAFT MAINTENANCE, USING A SIMPLIFIED MODEL**

L. W. Miller, A. S. Ginsburg, and W. L. Maxwell Jun. 1974 34 p refs

(Contract F44620-73-C-0011)

(AD-787881; R-1385-PR) Avail: NTIS CSCL 15/5

An attempt to elucidate the ways in which priority policy affects product completion time. A simple model of a product-assembly (or aircraft-maintenance) shop's processes was created, and products consisting of one or more jobs were fed into it. Three general categories of priority policy were tested: those (a) determined by job length, number of jobs in a product, or total product-processing requirement, (b) determined by status of jobs in a product, and (c) determined by current resource commitments. It turned out that there is a dependence among the choices, i.e., the best choice in (b) varies with the attribute selected in (a). The best procedure among those tried was an unstated work content rule. That is, give highest priority to the set of waiting jobs whose product has the least sum of processing times. The statistical significance of the experimental results is discussed and a concluding section relates this study to the real world problem that motivated it. Author (GRA)

**N75-15690# TRW Systems Group, Redondo Beach, Calif.**

**MANAGEMENT APPROACH RECOMMENDATIONS.  
EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY (EOS) Final Report**

1 Oct. 1974 61 p

(Contract NAS5-20519)

(NASA-CR-143644; TRW-22296-6001-RU-003; FR-4) Avail: NTIS HC \$4.25 CSCL 22B

Management analyses and tradeoffs were performed to determine the most cost effective management approach for the Earth Observatory Satellite (EOS) Phase C/D. The basic objectives of the management approach are identified. Some of the subjects considered are as follows: (1) contract startup phase, (2) project management control system, (3) configuration management, (4) quality control and reliability engineering requirements, and (5) the parts procurement program. Author

**N75-15692# TRW Systems Group, Redondo Beach, Calif.**

**SPACE-SHUTTLE INTERFACES/UTILIZATION. EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY (EOS) Final Report**

11 Nov. 1974 169 p refs

(Contract NAS5-20519)

(NASA-CR-143646; TRW-22296-6001-RU-005; FR-6) Avail: NTIS HC \$6.25 CSCL 22B

The economic aspects of space shuttle application to a representative Earth Observatory Satellite (EOS) operational mission in the various candidate Shuttle modes of launch, retrieval, and resupply are discussed. System maintenance of the same mission capability using a conventional launch vehicle is also considered. The studies are based on application of sophisticated Monte Carlo mission simulation program developed originally for studies of in-space servicing of a military satellite system. The program has been modified to permit evaluation of space shuttle application to low altitude EOS missions in all three modes. The conclusions generated by the EOS system study are developed. Author

**N75-15694\*** General Electric Co., Philadelphia, Pa. Space Div.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT 1: ORBIT/LAUNCH VEHICLE TRADE-OFF STUDIES AND RECOMMENDATIONS**

15 Jul. 1974 107 p

(Contract NAS5-20518)

(NASA-CR-143648; DOC-74SD4240) Avail: NTIS HC \$5.25 CSCL 22B

A summary of the constraints and requirements on the Earth Observatory Satellite (EOS-A) orbit and launch vehicle analysis is presented. The propulsion system (hydrazine) and the launch vehicle (Delta 2910) selected for EOS-A are examined. The rationale for the selection of the recommended orbital altitude of 418 nautical miles is explained. The original analysis was based on the EOS-A mission with the Thematic Mapper and the High Resolution Pointable Imager. The impact of the revised mission model is analyzed to show how the new mission model affects the previously defined propulsion system, launch vehicle, and orbit. A table is provided to show all aspects of the EOS multiple mission concepts. The subjects considered include the following: (1) mission orbit analysis, (2) spacecraft parametric performance analysis, (3) launch system performance analysis, and (4) orbits/launch vehicle selection. Author

**N75-15695\*** General Electric Co., Philadelphia, Pa. Space Div.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT 2: INSTRUMENT CONSTRAINTS AND INTERFACES**

15 Jul. 1974 138 p

(Contract NAS5-20518)

(NASA-CR-143649; DOC-74SD4241) Avail: NTIS HC \$5.75 CSCL 22B

The instrument constraints and interface specifications for the Earth Observatory Satellite (EOS) are discussed. The Land Use Classification Mission using a 7 band Thematic Mapper and a 4 band High Resolution Pointable Imager is stressed. The mission and performance of the instruments were reviewed and expanded to reflect the instrument as a part of the total remote sensing system. A preliminary EOS interface handbook is provided to describe the mission and system, to specify the spacecraft interfaces to potential instrument contractors, and to describe the instrument interface data required by the system integration contractor. Author

**N75-15696\*** General Electric Co., Philadelphia, Pa. Space Div.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT 3: DESIGN COST TRADE-OFF STUDIES AND RECOMMENDATIONS**

15 Jul. 1974 341 p

(Contract NAS5-20518)

(NASA-CR-143650; DOC-74SD4242) Avail: NTIS HC \$9.50 CSCL 22B

An analysis of the design and cost tradeoff aspects of the Earth Observatory Satellite (EOS) development is presented. The design/cost factors that affect a series of mission/system level concepts are discussed. The subjects considered are as follows: (1) spacecraft subsystem cost tradeoffs, (2) ground system cost tradeoffs, and (3) program cost summary. Tables of data are provided to summarize the results of the analyses. Illustrations of the various spacecraft configurations are included. Author

**N75-15697\*** General Electric Co., Philadelphia, Pa. Space Div.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT 4: LOW COST MANAGEMENT APPROACH AND RECOMMENDATIONS**

15 Jul. 1974 74 p

(Contract NAS5-20518)

(NASA-CR-143651; DOC-74SD4243) Avail: NTIS HC \$4.25 CSCL 22B

An analysis of low cost management approaches for the development of the Earth Observatory Satellite (EOS) is presented. The factors of the program which tend to increase costs are identified. The NASA/industry interface is stressed to show how this interface can be improved to produce reduced program costs. Techniques and examples of cost reduction which can be applied to the EOS program are tabulated. Specific recommendations for actions to be taken to reduce costs in prescribed areas are submitted. Author

**N75-15708\*** Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 2: INSTRUMENT CONSTRAINTS AND INTERFACE SPECIFICATIONS**

Sep. 1974 167 p refs

(Contract NAS5-20520)

(NASA-CR-143662) Avail: NTIS HC \$4.25 CSCL 22B

The instruments to be flown on the Earth Observatory Satellite (EOS) system are defined. The instruments will be used to support the Land Resources Management (LRM) mission of the EOS. Program planning information and suggested acquisition activities for obtaining the instruments are presented. The subjects considered are as follows: (1) the performance and interface of the Thematic Mapper (TM) and the High Resolution Pointing Imager (HRPI), (2) procedure for interfacing the TM and HRPI with the EOS satellite, (3) a space vehicle integration plan suggesting the steps and sequence of events required to carry out the interface activities, and (4) suggested agreements between the contractors for providing timely and equitable solution of problems at minimum cost. Author

**N75-15709\*** Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 3: DESIGN/COST TRADEOFF STUDIES**

Sep. 1974 439 p

(Contract NAS5-20520)

(NASA-CR-143663) Avail: NTIS HC \$11.25 CSCL 22B

The key issues in the Earth Observatory Satellite (EOS) program which are subject to configuration study and tradeoff are identified. The issue of a combined operational and research and development program is considered. It is stated that cost and spacecraft weight are the key design variables and design options are proposed in terms of these parameters. A cost analysis of the EOS program is provided. Diagrams of the satellite configuration and subsystem components are included. Author

**N75-15714\*** Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 3: DESIGN/COST TRADEOFF STUDIES. APPENDIX E: EOS PROGRAM SUPPORTING SYSTEM. PART 1: SYSTEM TRADE STUDIES NO. 1 THROUGH 8**

Sep. 1974 255 p refs

(Contract NAS5-20520)

(NASA-CR-143668) Avail: NTIS HC \$8.50 CSCL 22B

The design requirements and associated cost impacts for using the space shuttle to deliver the Earth Observatory Satellite (EOS) are identified. The additional impact of achieving full compatibility for resupply and retrieval is considered. Based on the results of the analysis, it is concluded that the EOS-Shuttle compatibility can be realized with reasonable spacecraft weight and cost penalties. Inherent space shuttle capabilities are adequate to meet the requirements of all missions except E and F. Mission E (Tiros 0) may be accommodated by either an EOS orbit transfer capability or a tug. The tug appears to be the only viable approach to satisfying the mission F (SEOS) requirements. Author

**N75-15716\*** Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 4: MANAGEMENT APPROACH RECOMMENDATIONS**

Sep. 1974 87 p

**N75-15717**

(Contract NAS5-20520)

(NASA-CR-143670) Avail: NTIS HC \$4.75 CSCL 22B

A management approach for the Earth Observatory Satellite (EOS) which will meet the challenge of a constrained cost environment is presented. Areas of consideration are contracting techniques, test philosophy, reliability and quality assurance requirements, commonality options, and documentation and control requirements. The various functional areas which were examined for cost reduction possibilities are identified. The recommended management approach is developed to show the primary and alternative methods.

Author

**N75-15717\***# Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 5: SYSTEM DESIGN AND SPECIFICATIONS. PART 1: OBSERVATORY SYSTEM ELEMENT SPECIFICATIONS**

Oct. 1974 288 p refs

(Contract NAS5-20520)

(NASA-CR-143671) Avail: NTIS HC \$8.75 CSCL 22B  
and recording, (2) data processing and product generation, (3) spacecraft and processing management and control, and (4) data user services. The configuration and purposes of the primary or high-data rate system and the secondary or local user system are explained. Diagrams of the systems are provided to support the systems analysis.

Author

**N75-15718\***# Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 5: SYSTEM DESIGN AND SPECIFICATIONS. PART 2: GROUND SYSTEM ELEMENT SPECIFICATIONS**

Oct. 1974 140 p

(Contract NAS5-20520)

(NASA-CR-143672) Avail: NTIS HC \$5.75 CSCL 22B

The Ground System requirements for the Land Resources Management (LRM) type-A and type-B missions of the Earth Observatory Satellite (EOS) program are presented. Specifications for the Thematic Mapper data processing are provided (LRM A mission). The specifications also cover the R and D instruments (Thematic Mapper and High Resolution Pointable Imager) data processing for the LRM type-B mission.

Author

**N75-15720\***# Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 7: EOS SYSTEM DEFINITION REPORT**

Nov. 1974 228 p

(Contract NAS5-20520)

(NASA-CR-143674) Avail: NTIS HC \$7.50 CSCL 22B

The design concept and operational aspects of the Earth Observatory Satellite (EOS) are presented. A table of the planned EOS missions is included to show the purpose of the mission, the instruments involved, and the launch date. The subjects considered in the analysis of the EOS development are: (1) system requirements, (2) design/cost trade methodology, (3) observatory design alternatives, (4) the data management system, (5) the design evaluation and preferred approach, (6) program cost compilation, (7) follow-on mission accommodation, and (8) space shuttle interfaces and utilization. Illustrations and block diagrams of the spacecraft configurations are provided.

Author

**N75-15721\***# Grumman Aerospace Corp., Bethpage, N.Y.

**EARTH OBSERVATORY SATELLITE SYSTEM DEFINITION STUDY. REPORT NO. 7: EOS SYSTEM DEFINITION REPORT. APPENDIXES A THROUGH D**

Sep. 1974 199 p refs

(Contract NAS5-20520)

(NASA-CR-143675) Avail: NTIS HC \$7.00 CSCL 22B

An analysis of the systems involved in the operation and support of the Earth Observatory Satellite (EOS) is presented. Among the systems considered are the following: (1) the data management system, (2) observatory to primary ground station communications links, (3) local user system, (4) techniques for

recognizing ground control points, (5) the central data processing-implementation concept, and (6) program effectiveness analysis.

Author

**N75-16013\***# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**A SUMMARY AND ANALYSIS OF SELECTED LIFE CYCLE COSTING TECHNIQUES AND MODELS M.S. Thesis**

Lawrence E. Dover and Billie E. Oswald, Jr. Aug. 1974 181 p refs

(AD-787183; SLSR-18-74B) Avail: NTIS CSCL 15/3

Operational costs continue to recur throughout the life of a weapon system and normally represents the majority of life cycle costs. Presented are an Annotated Bibliography of Selected Life Cycle Costing Literature and a Taxonomy of Selected Life Cycle Cost Models. The Annotated Bibliography is sectionized into six areas: Directives and Guides; General Philosophy and Methodology; Reliability and Maintainability; Cost-Effectiveness; Cost Models; and Case Studies and Technical Reports. The Taxonomy discusses six types of life cycle cost models including accounting, cost estimating relationship, simulation, failure-free warranty, reliability, and economic analysis models. One conclusion is that awareness of life cycle costing concepts results in better planning and decision making. (Modified author abstract) GRA

**N75-16149\***# Bechtel Corp., San Francisco, Calif.

**STUDY OF SINGLE-RESPONSIBILITY CONCEPTS FOR WATER POLLUTION CONTROL PROJECTS Final Report**

Apr. 1974 129 p

(Contract EPA-68-01-0973)

(PB-235056/9; BECHTEL-10293-001) Avail: NTIS HC \$5.75 CSCL 13B

Characteristics of various types of construction projects are summarized. Method and time of contractor selection, level of contractor responsibility, degree of project control, potential for schedule compression, firmness of cost estimate, availability of process guarantee, and typical compensation methods are described for each project type. Advantages and disadvantages of each type are discussed.

GRA

**N75-16310\***# National Science Foundation, Washington, D.C. **GUIDE TO PROGRAMS, FISCAL YEAR 1975**

1975 91 p

Avail: SOD HC \$1.70

The criteria for selection of research projects by the NSF are discussed along with the NSF relationship to other research organizations. The support is described for scientific research projects, research applications, national research centers, and international cooperative scientific activities. The objectives of the science education program are discussed.

F.O.S.

**N75-16408\***# George Washington Univ., Washington, D.C. **THE SOUTHERN REGIONAL CONFERENCE ON TECHNOLOGY ASSESSMENT: SUMMARY**

Vary T. Coates and John E. Mock Oct. 1974 44 p Sponsored by NSF

(Grant NGL-09-010-030; Contract ERP-3-05807-A01)

(NASA-CR-142006) Avail: NTIS HC \$3.75 CSCL 05A

The proceedings of a conference on technology assessment are presented. A survey of recent Federal activity in technology assessment was discussed initially. Emphasis was placed on state and local activities with respect to technology assessment to include the following subjects: (1) the technology assessment desired by states, (2) organization of technology assessment activities, (3) how to perform technology assessments for less than \$5,000, and (4) the preparation of environmental impact statements. Specific application of technology assessment to solid waste management in Connecticut is reported.

Author

**N75-16418\***# Rochester Univ., N.Y.

**SCIENCE AND TECHNOLOGY IN THE CORPORATE SEARCH FOR ORDER: AMERICAN ENGINEERS AND SOCIAL REFORM, 1900-1929 Final Report**

David Franklin Noble May 1974 566 p refs

(Grant DL-91-36-72-39)

(PB-236375/2; DLMA-91-36-72-39) Avail: NTIS HC \$13.00

Technology as a social process is examined. Emphasis is placed on the experience of American engineers in the early 20th Century. The development of the primary products of the 19th Century wedding of science to the useful art is traced. It is indicated that the large corporations undertook to manage the process of technology upon which they and the engineering profession were grounded. Corporate-minded engineers in the industries, the professional societies, and the schools sought reforms which included scientific and industrial standardization, the organization of industrial and university research, and reforms of the patent system and education. (Modified author abstract) GRA

**N75-16446#** Committee on Science and Astronautics (U. S. House).

#### VIKING PROJECT

Washington GPO 1974 301 p refs Hearings before Subcomm. on Space Sci. and Appl. of Comm. on Sci. and Astronaut. 93d Congr., 2d Sess., No. 51, 21-22 Nov. 1974 Nov. 1974 (GPO-44-128) Avail: Subcomm. on Space Sci.

A Congressional hearing was conducted to examine the NASA request for additional funds to be applied to the Lunar and Planetary Exploration program. The increase in the program is necessary to provide for unanticipated growth in funding requirements for the Viking project caused by development problems in a number of systems and subsystems. The authorized and planned actions on the FY 1974 program are tabulated to show the itemized expenditures. The objectives and operations of the Viking program are described. The technical problems involved in the project are reported. The rationale for the increased expenditures is presented by selected witnesses from NASA.

P.N.F.

**N75-16534#** TRW Systems Group, McLean, Va.

**AUTOMATION APPLICATIONS IN AN ADVANCED AIR TRAFFIC MANAGEMENT SYSTEM. VOLUME 2B: FUNCTIONAL ANALYSIS OF AIR TRAFFIC MANAGEMENT (CONTINUED)** Final Report, Nov. 1972 - Jan. 1974

F. Mertes Aug. 1974 256 p refs  
(Contract DOT-TSC-512)

(PB-236803/3; DOT-TSC-OST-74-14-2B) Avail: NTIS HC \$8.50; HC also available from NTIS \$59.00/set of 10 reports as PB-236800-SET CSCL 17G

Volume 2 contains the analysis and description of air traffic management activities at three levels of detail functions, subfunctions, and tasks. A total of 265 tasks are identified and described, and the flow of information inputs and outputs among the tasks is specified. (Modified author abstract) GRA

**N75-16537#** TRW Systems Group, McLean, Va.

**AUTOMATION APPLICATIONS IN AN ADVANCED AIR TRAFFIC MANAGEMENT SYSTEM. VOLUME 3: METHODOLOGY FOR MAN-MACHINE TASK ALLOCATION** Final Report, Nov. 1972 - Jan. 1974

F. Mertes and L. Jenny Aug. 1974 230 p refs  
(Contract DOT-TSC-512)

(PB-236806/6; DOT-TSC-OST-74-14-3) Avail: NTIS HC \$7.50; HC also available from NTIS \$59.00/set of 10 reports as PB-236800-SET CSCL 17G

Volume 3 describes the methodology for man-machine task allocation. It contains a description of man and machine performance capabilities and an explanation of the methodology employed to allocate tasks to human or automated resources. It also presents recommended allocations of tasks at five incremental levels of automation. (Modified author abstract) GRA

**N75-17201\*** Chamber of Commerce, Houston, Tex.

**ADAPTATIONS OF ADVANCED SAFETY AND RELIABILITY TECHNIQUES TO PETROLEUM AND OTHER INDUSTRIES**

Paul E. Purser In its Proc. of the 1st 1974 Technol. Transfer Conf. 1974 p 133-142 refs

CSCL 13H

The underlying philosophy of the general approach to failure reduction and control is presented. Safety and reliability management techniques developed in the industries which have participated in the U.S. space and defense programs are described along with adaptations to nonaerospace activities. The examples given illustrate the scope of applicability of these techniques. It is indicated that any activity treated as a 'system' is a potential user of aerospace safety and reliability management techniques.

J.M.S.

**N75-17210\*** Houston Univ., Tex.

#### ECONOMIC MODELING AND ENERGY POLICY PLANNING

Russell G. Thompson, Andrew Schwartz, Jr., Rodrigo J. Lievano, and John C. Stone In Chamber of Commerce Proc. of the 1st 1974 Technol. Transfer Conf. 1974 p 239-243

#### CSCL 10A

A structural economic model is presented for estimating the demand functions for natural gas and crude oil in industry and in steam electric power generation. Extensions of the model to other commodities are indicated.

Author

**N75-17212\*** Dresser Industries, Inc., Dallas, Tex.

#### THE CHALLENGES OF TECHNOLOGY TRANSFER

John N. Hazelwood In Chamber of Commerce Proc. of the 1st 1974 Technol. Transfer Conf. 1974 p 259-264

#### CSCL 14A

Observations of challenges of technology transfer are presented with emphasis placed on the position of industry seeking technology through the media of technology searches. Factors considered are: (1) not-invented-here syndrome; (2) penetration of technological literature; (3) gap between origin and industry use; (4) large aerospace manufacturer vs. the small manufacturer; (5) link between the technology disseminator and the potential user; (6) feasibility of substitutions in terms of production costs; and (7) role of patents. It is shown that industry, government agencies, and others having technology to disseminate or use, must mutually understand the technology tools and translate to one another's capabilities, in order to profit from this national resource.

J.M.S.

**N75-17225#** Federal Aviation Agency, Washington, D.C. Office of Systems Engineering Management.

#### ENGINEERING AND DEVELOPMENT PROGRAM PLAN.

#### PROGRAM STRUCTURE AND OBJECTIVES

1 Jul. 1974 43 p  
(AD-783186; FAA-ED-00-B) Avail: NTIS HC \$3.25 CSCL 17/7

The Office of Systems Engineering Management's program plans covering the present twenty-one engineering and development programs within the Federal Aviation Administration are presented. These plans provide detailed information on the objectives, goals, program structure, technical approach, resources, possible implementation, and a number of other aspects for each of these programs. An introductory background to the planning process, the objectives in each of the program areas, and an index of the plans, available or under preparation are presented.

Author

**N75-17226#** Comptroller General of the United States, Washington, D.C.

#### PROBLEMS IN MANAGING THE DEVELOPMENT OF AIRCRAFT ENGINES

23 May 1974 36 p refs  
(B-179166) Avail: NTIS HC \$3.75

The method traditionally followed by the military in developing and acquiring aircraft engines is evaluated in terms of its cost effectiveness. Evidence is presented that aircraft engines require further development of capability, performance and endurance beyond that needed to pass the model qualification test. The budgeting and financing of the component improvement program is detailed. Revisions of the presently used methods are proposed.

N.E.R.

**N75-17255#** Committee on Science and Astronautics (U. S. House).

**THE 1975 NATIONAL SCIENCE FOUNDATION AUTHORIZATION**

Washington GPO 1974 867 p refs Hearings on H.R. 12816 (superseded by H.R. 13999) before Subcomm. on Sci., Res., and Develop. of Comm. on Sci. and Astronaut., 93d Congr., 2d Sess., No. 28, 12-15 Mar. and 19 Mar. 1974 (GPO-31-787) Avail: Subcomm. on Sci., Res., and Develop.

The basic research programs of the Foundation are reviewed with emphasis on energy-related research. The research supported in the following areas is discussed: earth sciences, oceanography, biological sciences, ecosystems, physics, chemistry, and social sciences. GARP and other specific research programs are described.

F.O.S.

**N75-17783#** Resources for the Future, Inc., Washington, D.C.  
**US ENERGY R AND D POLICY: THE ROLE OF ECONOMICS**

John E. Tilton Sep. 1974 138 p refs

(Grant NSF ATA-73-07742-A02)

(RFF-Working-Paper-EN-4) Avail: NTIS HC \$5.75

Issues concerning the government funding of energy research and development are investigated from an economic perspective. The evolution of present-day energy R and D funding is described, and economic reasons for government intervention in the R and D effort are outlined. The importance of establishment public goals and priorities in energy policy-making is stressed. Major shortcomings of government funding policies are considered, with possible alternatives given.

N.E.R.

**N75-17806#** Committee on Interior and Insular Affairs (U. S. Senate).

**OVERSIGHT: MANDATORY PETROLEUM ALLOCATION PROGRAMS**

Washington GPO 1974 194 p refs Hearings pursuant to S. Res. 45 before Comm. on Interior and Insular Affairs, 93d Congr., 2d Sess., 15 Jan. - 28 Feb. 1974 Prepared by Federal Trade Commission

(GPO-31-027) Avail: Comm. on Interior and Insular Affairs

Findings and conclusions are presented of a program to monitor the implementation of mandatory petroleum allocation and price regulation under the Emergency Petroleum Allocation Act. Other topics discussed include the effectiveness of the allocation program, the administration of the program, historical trends in petroleum supply and demand, and regional and state allocation programs.

M.J.S.

**N75-17827#** Development Planning and Research Associates, Inc., Manhattan, Kans.

**INDUSTRIAL ENERGY STUDY OF SELECTED FOOD INDUSTRIES** Final Report

Jul. 1974 582 p refs

(Contract DI-14-01-0001-1652)

(PB-237316/5; FEA/EI-1652) Avail: NTIS HC \$13.25 CSCL 10A

The amount of energy used by each of 14 SIC industries within the food and kindred products industry (SIC 20) is given. Report covers the meat packing industry; sausages and other prepared meats industry; fluid milk industry; canned fruits and vegetables industry; frozen fruits and vegetables industry; animal feeds industry; wet corn milling industry; cane sugar and beet sugar industries; malt beverage industry; animal and marine fats and oils industry; manufactured ice industry; bread, cake, and related products industry; and soybean oil mills industry. GRA

**N75-17864#** National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

**HANDBOOK FOR SPACE PROCESSING SOUNDING ROCKET SCIENCE PAYLOADS**

Mar. 1975 52 p

(NASA-TM-X-72319; M-EH-75-2) Avail: NTIS HC \$4.25 CSCL 04A

Current Space Processing Rocket Experiment Project objectives are described. Guidelines are recommended for various phases of the project, in reference to time, cost, and management.

N.E.R.

**N75-17905** British Library Lending Div., Boston Spa (England).  
**THE IMPORTANCE OF SYSTEMS ANALYSIS METHODS IN METEOROLOGY**

W. Fett 1974 29 p refs Transl. into ENGLISH from Ann. Met. (West Ger.), no. 6, 1973 p 97-109  
(BLL-M-23627-(5828.4F)) Avail: British Library Lending Div., Boston Spa, Engl.: 3 BLL photocopy coupons

A systematic analysis approach to meteorology is discussed. The fundamental principles of systems theory, and systems analysis models are also discussed.

F.O.S.

**N75-17955\*** Scientific Translation Service, Santa Barbara, Calif.  
**VERBALIZATION AND IMAGERY IN THE PROCESS OF FORMATION OF OPERATOR LABOR SKILLS**

V. V. Mistyuk *In its Essays on the Psychology of Operator Labor* (NASA-TT-F-16020) Jan. 1975 p 281-302 refs Transl. into ENGLISH from the book "Ocherki Psichologii Truda Operatora" Moscow, Nauka Press, 1974 p 231-249

**CSCL 05J**

Sensorimotor control tests show that mastering operational skills occurs under conditions that stimulate the operator to independent active analysis and summarization of current information with the goal of clarifying the signs and the integral images that are a model of the situation. Goal directed determination of such an image requires inner and external speech, activates and improves the thinking of the operator, accelerates the training process, increases its effectiveness, and enables the formation of strategies in anticipating the course of events.

Author

**N75-18115#** Wright (Philip) Associates, Storrs, Conn.

**THE FEASIBILITY OF A UNIFIED ROLE FOR NASA REGIONAL DISSEMINATION CENTERS AND TECHNOLOGY APPLICATION TEAMS** Final Report

Sep. 1974 138 p refs

(Contract NASw-2597)

(NASA-CR-142116) Avail: NTIS HC \$5.75 CSCL 05A

Insights and recommendations arising from a study of the feasibility of combining the NASA Regional Dissemination Center (RDC) and Technology Application Team (Tateam) roles to form Regional Application Centers (RADCs) are presented. The apparent convergence of the functions of RDC's and Tateams is demonstrated and strongly supportive of the primary recommendation that an applications function be added to those already being performed by the RDC's. The basis of a national network for technology transfer and public and private sector problem solving is shown to exist, the skeleton of which is an interactive network of Regional Application Centers and NASA Field Centers. The feasibility of developing and extending this network is considered and the detailed ramifications of so doing are discussed and the imperatives emphasized. It is hypothesized that such a national network could become relatively independent of NASA funding within five years.

Author

**N75-18196#** Royal Netherlands Aircraft Factories Fokker, Schiphol-Oost.

**MANAGING FOR AIRWORTHINESS AND RELIABILITY IN THE LOW DENSITY SHORTHAUL ENVIRONMENT**

W. K. Lehmann 1973 12 p refs Presented at the FAA Maintenance Symp., Washington, D. C., 11-13 Dec. 1973

(FOK-K-77) Avail: NTIS HC \$3.25

Short haul aircraft operations are looked at from the airworthiness and reliability points of view. Basic design objectives, product and parts support, maintenance aspects, field assistance, and service engineering for short haul aircraft are discussed and illustrated by the VFW-Fokker approach.

ESRO

**N75-18269#** Rockwell International Corp., Canoga Park, Calif. Space Div.

**SPACELAB USER IMPLEMENTATION ASSESSMENT STUDY: EXECUTIVE SUMMARY Final Report**  
 Feb. 1975 61 p  
 (Contract NAS1-12933)  
 (NASA-CR-132579; SD-74-SA-0156) Avail: NTIS HC \$4.25  
 CSCL 22A

An overview of the study is presented. A synopsis of processing concepts for the Spacelab configurations, a summary of integration and checkout optimizations, and cost analyses are included.  
 F.O.S.

**N75-18736# Alabama Energy Management Board, Montgomery. COAL IN ALABAMA**

Frank P. Scruggs, Jr. Sep. 1974 43 p refs Sponsored in part by Appalachian Regional Commission, Washington, D. C. (PB-236583/1; ALA-EMB-X996-149R-01) Avail: NTIS HC \$3.75 CSCL 081

One of a series of four fact sheets is reported that present data on the availability and use of energy resources in the State of Alabama. It covers coal reserves, production, distribution, and consumption patterns. GRA

**N75-18773# CER Geonuclear Corp., Las Vegas, Nev. RIO BLANCO MASSIVE HYDRAULIC FRACTURE. PHASE 2: ORGANIZATION**

1 Aug. 1974 48 p Revised Sponsored by ERDA (PNE-MHF-2-Rev) Avail: NTIS HC \$3.75

The organizational phase of the Rio Blanco Massive Hydraulic Fracture experiment in which the USAEC, Dept. of Interior, and 13 to 20 industrial companies are participating is described. Information is included on the drilling, fracturing, and evaluation program, safety considerations, logistics, public information, and environmental assessment. NSA

**N75-18795# Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.**

**BACKGROUND INFORMATION FOR STANDARDS OF PERFORMANCE: PRIMARY ALUMINUM INDUSTRY. VOLUME 1: PROPOSED STANDARDS**

Oct. 1974 123 p refs (PB-237612/7; EPA-450/2-74-020a-Vol-1) Avail: NTIS HC \$5.25 CSCL 13B

The volume on air pollution control is the first of a series on standards of performance for primary aluminum plants. This report presents the proposed standards and the rationale for the degree of control selected. Volume one discusses the analytical methods for sampling emissions and the environmental and economic impact of the standards. GRA

**N75-18796# Environmental Protection Agency, Research Triangle Park, N.C. Emission Standards and Engineering Div.**

**BACKGROUND INFORMATION FOR STANDARDS OF PERFORMANCE: PRIMARY ALUMINUM INDUSTRY. VOLUME 2: TEST DATA SUMMARY**

Oct. 1974 123 p refs (PB-237613/5; EPA-450/2-74-020b-Vol-2) Avail: NTIS HC \$5.25 CSCL 13B

Volume two of a two-part report on the control of fluorides and other emissions from aluminum producing plants concentrates on metal and pollutant production statistics, pollution sources, and test methods. GRA

**N75-19069# Naval Postgraduate School, Monterey, Calif. THE SYSTEMS APPROACH AND PROJECT MANAGEMENT IN THE NAVAL LABORATORY M.S. Thesis**

James Victor Qurolo, Jr. and Johnny Lee Roberts Sep. 1974 114 p refs (AD-A001298) Avail: NTIS CSCL 05/1

The study investigates current thinking on the systems approach to management and its applicability to the project manager as an individual in the Naval laboratory, specifically the Naval Electronics Laboratory Center (NELC) in San Diego, California. It looks at the NELC organization, management

roles, conflicts, interfaces, problems and some procedures which are used by project managers in planning and controlling. The authors conclude that laboratory project managers can be more effective if they have some management orientation or philosophy, and that the management philosophy that best fits the laboratory environment is the systems approach. GRA

**N75-19078# Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.**

**THEORETICAL AND METHODOLOGICAL QUESTIONS OF SCIENTIFIC-TECHNOLOGICAL FORECASTING**

V. Lisichkin 21 Oct. 1974 19 p Transl. into ENGLISH from the book "Teoriya i Praktika Prognozirovaniya Razvitiya Nauki i Tekhniki v Stranakh-Chlenakh SSSR" Moscow, Izd vo Ekonomika, 1971 p 46-53

(AD-A000447; FTD-HC-23-2334-74) Avail: NTIS CSCL 05/2

The structure of technical forecasts is seen as determined by three basic points, by the logical structure of the process of development, by analysis and synthesis of the objectives, and by the choice of methods of forecasting, relating to specific objectives. GRA

**N75-19079# Air Force Systems Command, Wright-Patterson AFB, Ohio.**

**FORECASTING AND STRATEGY IN SCIENTIFIC POLICY**

N. Stefanov and S. Kachaunov 15 Oct. 1974 13 p Transl. into ENGLISH from the book "Teoriya i Praktika Prognozirovaniya Razvitiya Nauki i Tekhniki v Stranakh-Chlenakh SSSR" Moscow, Izd vo Ekonomika, 1971 p 64-68

(AD-A000444; FTD-HC-23-2336-74) Avail: NTIS CSCL 05/2

Strategy and tactics are discussed as the basic elements of scientific policy. At the contemporary stage, the question of the most rational inclusion of forecasts in the general system of the construction of the strategy and tactics of scientific activity is becoming central. GRA

**N75-19083 Carnegie-Mellon Univ., Pittsburgh, Pa.**

**A STRATEGY FOR THE EVALUATION OF ALTERNATIVE URBAN TRANSPORTATION SYSTEMS WITH MULTIDIMENSIONAL CONSEQUENCES Ph.D. Thesis**

Feng-Bor Lin 1974 173 p Avail: Univ. Microfilms Order No. 75-923

Two interrelated areas were examined. One is the validity of existing evaluation techniques potentially suitable for dealing with problems involving multidimensional consequences, and the other is the development of an evaluation model in the context of additive utilities for unifying value judgements in search of the best alternative transportation plan. Four basic evaluation models are identified in the study for comparative analysis. The analysis reveals that the existing techniques are unreliable due to the lack of a valid value transformation mechanism. In this study, a derived rather than an intuitive value transformation mechanism is employed for the development of a generalized evaluation model. The model developed in this study provides planners with a flexible, informative, and effective tool to deal with evaluation problems involving either deterministic or probabilistic value judgements. Dissert. Abstr.

**N75-19954# Aerospace Medical Div., Brooks AFB, Tex.**

**AIR FORCE TECHNICAL OBJECTIVE DOCUMENT: AMD FISCAL YEAR 1976 Final Report**

Thomas D. N. Douthit 16 Dec. 1974 43 p (AD-A002580; AMD-TR-74-1) Avail: NTIS CSCL 06/2

The document describes the planning methodology used within the Aerospace Medical Division (AMD) laboratories' five technology areas. Efforts were directed in the biotechnology program to man's adaptability, survivability, and performance capabilities within his operational environment. The research and development of AMD's functions is accomplished as disciplinary work by teams of biomedical scientists, engineers and physical scientists within the Air Force laboratories and the industrial and academic research and development communities. GRA

N75-19969# Air Force Human Resources Lab., Brooks AFB, Tex.

**FISCAL YEAR 1975: AIR FORCE TECHNICAL OBJECTIVE DOCUMENT**

Sep. 1974 19 p

(AD-A002154; AFHRL-TR-74-81) Avail: NTIS CSCL 05/9

The document provides the academic and industrial R and D community with a summary of the technical area objectives of Air Force research in the field of human resources. The areas covered are: (a) Personnel systems technology and utilization; (b) education and training technology; (c) performance evaluation; and (d) human resources data and systems design and operation. GRA

N75-20143# Joint Publications Research Service, Arlington, Va.

**LEGAL STATUS, ADMINISTRATIVE ORGANS, FUNCTIONS OF USSR ACADEMY OF SCIENCES**

V. A. Dozortsev 19 Mar. 1975 15 p refs Transl. into ENGLISH from Sov. Gos. i Pravo (Moscow), no. 11, 1974 p 19-26 (JPRS-64359) Avail: NTIS HC \$3.25

A description of the functions and activities of the U.S.S.R. Academy of Sciences is presented. A definition of its legal status as presented in a number of documents is included along with its structure and administrative organs. Author

N75-20163# Miami Univ., Coral Gables, Fla.

**DIVIDENDS FROM SPACE, VOLUME 1 AND 2 M.S.**

Thesis

Nancy-Lee Olsen Jun. 1972 507 p refs

Avail: NTIS HC \$12.25

Benefits accrued from the space program are presented. It is indicated that a scientific and technological revolution put into motion by the joint effort of NASA, industry, scientific community, and academic researchers has affected man's social, economic, and industrial problems as well as providing breakthroughs in fabrics, metallurgy, electronics, food processing, communications, ceramics, medicine, and other fields. It is shown that an extensive program is needed for effective transfer of this technology to the American public. J.M.S.

N75-20201# Joint Publications Research Service, Arlington, Va.

**TRANSLATIONS ON EASTERN EUROPE: SCIENTIFIC AFFAIRS, NO. 455**

21 Feb. 1975 19 p Transl. into ENGLISH from East European reports

(JPRS-64146) Avail: NTIS HC \$3.25

Articles are presented concerning the development and progress in various theoretical and applied scientific disciplines and technical fields.

N75-20206 Joint Publications Research Service, Arlington, Va.  
**CPM AND PERT METHODS APPLIED IN RESEARCH AND DEVELOPMENT**

Jerzy Wyszomirski In its Transl. on Eastern Europe: Sci. Affairs, No. 454 (JPRS-64093) 12 Feb. 1975 p 27-35 Transl. into ENGLISH from Inwestycje i Budownictwo (Warsaw), no. 11, Nov. 1974 p 36-40

Critical path activity network construction is described. The advantages and disadvantages of using the PERT and CPM for network research are discussed. The PERT program is used to automatically compute the average times for network implementation. Network diagrams are included. J.A.M.

N75-20357 Union Coll., Schenectady, N.Y.

**AN ANALYTICAL STUDY OF THE INTERACTION OF TECHNOLOGICAL AND ADMINISTRATIVE DECISION-MAKING IN THE DEFINING OF MARS PROJECT VIKING Ph.D. Thesis**

James Francis McNulty 1974 567 p

Avail: Univ. Microfilms Order No. 74-27354

An engineering and administrative systems study is made of the definition of NASA's 1975 Mars landing project. The work performed at NASA's Langley Research Center from initial probe to lander hardware commitment is described. The focus is on the technical staff, its contributions, and its interactions with Langley management, Washington NASA headquarters, and other NASA Centers. The workings of the technical-administrative systems are analyzed by utilization of formal system concepts. An appendix documenting the technology base developed is included.

Dissert. Abstr.

**N75-20432 \*# Grumman Aerospace Corp., Bethpage, N.Y. Product Support Dept.**

**OPERATIONS PLANNING SIMULATION MODEL EXTEN-**

**SION STUDY. VOLUME 1: LONG DURATION EXPOSURE**

**FACILITY ST-01-A AUTOMATED PAYLOAD Final Report**

D. A. Marks, R. E. Gendielee, T. M. Kelly, and M. A. Giovannello Mar. 1974 89 p

(Contract NAS8-31102)

(NASA-CR-120710; SU-OPS-RP-75-0001-Vol-1) Avail: NTIS HC \$4.75 CSCL 22B

Ground processing and operation activities for selected automated and sortie payloads are evaluated. Functional flow activities are expanded to identify payload launch site facility and support requirements. Payload definitions are analyzed from the launch site ground processing viewpoint and then processed through the expanded functional flow activities. The requirements generated from the evaluation are compared with those contained in the data sheets. The following payloads were included in the evaluation: Long Duration Exposure Facility; Life Sciences Shuttle Laboratory; Biomedical Experiments Scientific Satellite; Dedicated Solar Sortie Mission; Magnetic Spectrometer; and Mariner Jupiter Orbiter. The expanded functional flow activities and descriptions for the automated and sortie payloads at the launch site are presented. J.M.S.

**N75-20433 \*# Grumman Aerospace Corp., Bethpage, N.Y. Product Support Dept.**

**OPERATIONS PLANNING SIMULATION MODEL EXTEN-**

**SION STUDY. VOLUME 2: LIFE SCIENCES SHUTTLE**

**LABORATORY LS-09-S SORTIE PAYLOAD Final Report**

D. A. Marks, R. E. Gendielee, T. M. Kelly, and M. A. Giovannello 1 Feb. 1975 98 p

(Contract NAS8-31102)

(NASA-CR-120711; SU-OPS-RP-75-0001-Vol-2) Avail: NTIS HC \$4.75 CSCL 22B

For abstract, see N75-20432.

**N75-20434 \*# Grumman Aerospace Corp., Bethpage, N.Y. Product Support Dept.**

**OPERATIONS PLANNING SIMULATION MODEL EXTEN-**

**SION STUDY. VOLUME 3: DEDICATED SOLAR SORTIE**

**MISSION SO-01-S SORTIE PAYLOAD Final Report**

D. A. Marks, R. E. Gendielee, T. M. Kelly, and M. A. Giovannello Mar. 1974 105 p

(Contract NAS8-31102)

(NASA-CR-120712; SU-OPS-RP-75-0001-Vol-3) Avail: NTIS HC \$5.25 CSCL 22A

For abstract, see N75-20432.

**N75-20435 \*# Grumman Aerospace Corp., Bethpage, N.Y. Product Support Dept.**

**OPERATIONS PLANNING SIMULATION MODEL EXTEN-**

**SION STUDY. VOLUME 4: MAGNETIC SPECTROMETER**

**HE-15S SORTIE PAYLOAD Final Report**

D. A. Marks, R. E. Gendielee, T. M. Kelly, and M. A. Giovannello Mar. 1974 69 p

(Contract NAS8-31102)

(NASA-CR-120713; SU-OPS-RP-75-0001-Vol-4) Avail: NTIS HC \$4.25 CSCL 22B

For abstract, see N75-20432.

**N75-20436 \*# Grumman Aerospace Corp., Bethpage, N.Y. Product Support Dept.**

**OPERATIONS PLANNING SIMULATION MODEL EXTEN-**

**SION STUDY. VOLUME 5: MARINER JUPITER ORBITER**

**PL-12-A AUTOMATED PAYLOAD (UPPER STAGE USED) Final Report**

R. E. Gendeliee, T. M. Kelly, and M. A. Giovannello 1 Feb. 1975 62 p 6 Vol.  
 (Contract NAS8-31102)  
 (NASA-CR-120714; SU-OPS-RP-75-0001-Vol-5) Avail: NTIS HC \$4.25 CSCL 22B  
 For abstract, see N75-20432.

**N75-20437\*** Grumman Aerospace Corp., Bethpage, N.Y.  
 Product Support Dept.

**OPERATIONS PLANNING SIMULATION MODEL EXTENSION STUDY. VOLUME 6: EXPANDED FUNCTIONAL FLOWS AND DESCRIPTIONS Final Report**

D. A. Marks, R. E. Gendeliee, T. M. Kelly, and M. A. Giovannello 1 Feb. 1975 51 p  
 (Contract NAS8-31102)  
 (NASA-CR-120715; SU-OPS-RP-75-0001-Vol-6) Avail: NTIS HC \$4.25 CSCL 22A  
 For abstract, see N75-20432.

**N75-20829** Michigan State Univ., East Lansing.  
**ENERGY UTILIZATION BY HOUSEHOLDS AND TECHNOLOGY ASSESSMENT AS A WAY TO INCREASE ITS EFFECTIVENESS Ph.D. Thesis**

Otto Frederick Krauss 1974 268 p  
 Avail: Univ. Microfilms Order No. 74-27437

A management method aimed at reducing the differential between availability and expectancy is developed. A general background of the energy situation in the United States is given along with a description of energy uses and practices, and potentials for improving utilization efficiency. The critical role of the decisions made within family units which control energy consumption in the form of products and services is defined. It is indicated that major benefits to consumer, the environment, and society as a whole could accrue from the application of management methods to family decision making. A management scheme is proposed and illustrated that is an outgrowth of the concept of technology assessment. A 'satisfaction index' is utilized which depends on interrelated 'human-wants categories' to introduce environmental, social, and individual human factors to the familiar provision of goods and services. Trial assessments are made which evaluate the alternatives and identify the advantages and disadvantages in terms of their impact of the 'human-wants categories'. Results indicate a need for: (1) judicious preparation of the assessor; (2) careful selection and description of alternatives; (3) greater specificity with respect to categories; (4) time horizons; and (5) further trials.

Dissert. Abstr.

**N75-20833\*** National Science Foundation, Washington, D.C.  
**THE NSF/RANN FY 1975 PROGRAM FOR GEOTHERMAL RESOURCES RESEARCH AND TECHNOLOGY**

Paul Kruger *In JPL Proc. of the Conf. on Res. for the Develop. of Geothermal Energy Resources* 31 Dec. 1974 p 13-22

**CSCL 10A**

The specific goal of the NSF geothermal program is the rapid development by industry of the nation's geothermal resources that can be demonstrated to be commercially, environmentally and socially acceptable as alternate energy sources. NSF, as the lead agency for the federal geothermal energy research program, is expediting a program which encompasses the objectives necessary for significant utilization. These include: acceleration of exploration and assessment methods to identify commercial geothermal resources; development of innovative and improved technology to achieve economic feasibility; evaluation of policy options to resolve environmental, legal, and institutional problems; and support of experimental research facilities for each type of geothermal resource. Specific projects in each of these four objective areas are part of the NSF program for fiscal year 1975.

Author

**N75-20844\*** Imperial County Dept. of Public Works, El Centro, Calif.

**IMPERIAL VALLEY'S PROPOSAL TO DEVELOP A GUIDE FOR GEOTHERMAL DEVELOPMENT WITHIN ITS COUNTY**  
 David E. Pierson *In JPL Proc. of the Conf. on Res. for the*

**Develop. of Geothermal Energy Resources** 31 Dec. 1974 p 160-163  
 CSCL 10A

A plan to develop the geothermal resources of the Imperial Valley of California is presented. The plan consists of development policies and includes text and graphics setting forth the objectives, principles, standards, and proposals. The plan allows developers to know the goals of the surrounding community and provides a method for decision making to be used by county representatives. A summary impact statement for the geothermal development aspects is provided.

Author

**N75-20845\*** California Univ., Berkeley. Lawrence Berkeley Lab.

**THE LAWRENCE BERKELEY LABORATORY GEOTHERMAL PROGRAM IN NORTHERN NEVADA**

Kenneth F. Mirk and Harold A. Wollenberg *In JPL Proc. of the Conf. on Res. for the Develop. of Geothermal Energy Resources* 31 Dec. 1974 p 167-185 refs Sponsored in part by AEC

**CSCL 10A**

The Lawrence Berkeley Laboratory's geothermal program began with consideration of regions where fluids in the temperature range of 150 to 230 C may be economically accessible. Three valleys, located in an area of high regional heat flow in north central Nevada, were selected for geological, geophysical, and geochemical field studies. The objective of these ongoing field activities is to select a site for a 10-MW demonstration plant. Field activities (which started in September 1973) are described. A parallel effort has been directed toward the conceptual design of a 10-MW isobutane binary plant which is planned for construction at the selected site. Design details of the plant are described. Project schedule with milestones is shown together with a cost summary of the project.

Author

**N75-20846\*** California Univ., Livermore. Lawrence Livermore Lab.

**THE TOTAL FLOW CONCEPT FOR GEOTHERMAL ENERGY CONVERSION**

A. L. Austin *In JPL Proc. of the Conf. on Res. for the Develop. of Geothermal Energy Resources* 31 Dec. 1974 p 186-192

**CSCL 10A**

A geothermal development project has been initiated at the Lawrence Livermore Laboratory (LLL) to emphasize development of methods for recovery and conversion of the energy in geothermal deposits of hot brines. Temperatures of these waters vary from 150 C to more than 300 C with dissolved solids content ranging from less than 0.1% to over 25% by weight. Of particular interest are the deposits of high-temperature/high-salinity brines, as well as less saline brines, known to occur in the Salton Trough of California. Development of this resource will depend on resolution of the technical problems of brine handling, scale and precipitation control, and corrosion/erosion resistant systems for efficient conversion of thermal to electrical energy. Research experience to date has shown these problems to be severe. Hence, the LLL program emphasizes development of an entirely different approach called the Total Flow concept.

Author

**N75-20847\*** San Diego Gas and Electric Co., Calif.

**SAN DIEGO GAS AND ELECTRIC COMPANY IMPERIAL VALLEY GEOTHERMAL ACTIVITIES**

Thomas C. Hinrichs *In JPL Proc. of the Conf. on Res. for the Develop. of Geothermal Energy Resources* 31 Dec. 1974 p 194-206

**CSCL 10A**

San Diego Gas and Electric and its wholly owned subsidiary New Albion Resources Co. have been affiliated with Magma Power Company, Magma Energy Inc. and Chevron Oil Company for the last 2-1/2 years in carrying out geothermal research and development in the private lands of the Imperial Valley. The steps undertaken in the program are reviewed and the sequence that must be considered by companies considering geothermal research and development is emphasized. Activities at the south end of the Salton Sea and in the Heber area of

Imperial Valley are leading toward development of demonstration facilities within the near future. The current status of the project is reported.

Author

**N75-20849\*** Battelle-Northwest, Richland, Wash.

**THE MARYSVILLE, MONTANA GEOTHERMAL PROJECT**  
W. R. McSpadden, D. H. Stewart, and J. T. Kuwada (Rogers Eng. Company, Inc., San Francisco) In JPL Proc. of the Conf. on Res. for the Develop. of Geothermal Energy Resources 31 Dec. 1974 p 213-224 ref

CSCL 10A

Drilling the first geothermal well in Montana presented many challenges, not only in securing materials and planning strategies for drilling the wildcat well but also in addressing the environmental, legal, and institutional issues raised by the request for permission to explore a resource which lacked legal definition. The Marysville Geothermal Project was to investigate a dry hot rock heat anomaly. The well was drilled to a total depth of 6790 feet and many fractured water bearing zones were encountered below 1800 feet.

Author

**N75-20904#** Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.

**AIR QUALITY FOR URBAN AND INDUSTRIAL PLANNING Final Report**

John C. Goodrich, Scott T. McCandless, Michael J. Keefe, William P. Walsh, and Alan H. Epstein Mar. 1974 101 p refs Prepared in cooperation with the New Jersey Dept. of Environmental Protection, Trenton

(Contract EPA-68-02-0567)

(PB-238559/9; EPA-450/3-74-020-A) Avail: NTIS HC \$5.25 CSCL 13B

A summary of work undertaken for each of three major air quality tasks, a summary of the actual work undertaken, and an explanation of any deviations from the intended scope is reported. The report contains the findings of task 1 on the development of improved emissions projection activity indices; and task 2 on the development of a methodology for incorporating cost data into the evaluation of the air pollution impact of land use plans.

GRA

**N75-21015#** National Bureau of Standards, Washington, D.C. **SUMMARY OF THE OFFICE OF TOXIC SUBSTANCES REQUIREMENTS RESULTING FROM THE TOXIC SUBSTANCES CONTROL ACT AND A PRELIMINARY SPECIFICATION FOR A DATA MANAGEMENT SYSTEM Final Report**

John L. Berg, Josephine Walkowicz, Dennis Branstad, and Michael Keplinger Aug. 1974 143 p refs.

(Contract EPA-IAG-D4-0404)

(PB-238088/9; EPA-560/3-74-001) Avail: NTIS HC \$5.75 CSCL 06T

A requirements analysis and feasibility study are reported for the data management system needed to use effectively industrial reporting data resulting from the proposed toxic substances control act. The study finds that the Office of Toxic Substances requires a system with flexibility, extensibility of data content, ability to handle a wide and confidential nature of the reports, and suitability for immediate installation on a production basis. In the study both a manual system that minimally satisfies the basic requirements and a computerized system with much extended capabilities are found technically feasible.

GRA

**N75-21026#** Army Foreign Science and Technology Center, Charlottesville, Va.

**SCIENTIFIC MANAGEMENT PERSONNEL**

K. M. Varshavskii 26 Mar. 1974 26 p refs Transl. into ENGLISH from Nauk. Inform. Resp. Mezhved. Sb. (USSR), no. 6, 1972 p 12-23  
(AD-A002760; FSTC-HT-23-0220-74) Avail: NTIS CSCL 05/9

A study of management personnel in scientific research institutions has been involved with all aspects of the problem. The author states that the very nature of scientific work means

that management personnel must be of an exceptionally high standard. He suggests that elderly management personnel could work on a part-time basis to help scientific output and lend valuable experience to institutions.

GRA

**N75-21145#** Army Foreign Science and Technology Center, Charlottesville, Va.

**PERSONNEL COMPOSITION AND PATTERN IN THE DOMAIN OF SCIENCE AND SCIENTIFIC SERVICES**

V. S. Sominskii and E. M. Torf 12 Jan. 1974 15 p refs Transl. into ENGLISH from Naukovedenie i Informatika Respublikanskii Mezhdromstvennyi Sb. (USSR), no. 6, 1972 p 40-46 (AD-A002651; FSTC-HT-23-221-74) Avail: NTIS CSCL 05/9

The author discusses the composition of scientific personnel in the U.S.S.R. by branches of science and compares it with the similar structure in the U.S.A. Rates of growth and long term forecasts for changes in the structure are also discussed.

GRA

**N75-21146#** Army Foreign Science and Technology Center, Charlottesville, Va.

**CONCERNING THE STUDY OF THE PROFESSIONAL STRUCTURE OF R AND D STAFF**

K. M. Varshavskii 12 Jan. 1974 14 p refs Transl. into ENGLISH from Naukovedenie i Informatika Resp. Mezhdromstvennyi Sbornik (USSR), no. 5, 1972 p 90-98  
(AD-A002656; FSTC-HT-23-0222-74) Avail: NTIS CSCL 05/9

Investigation of the professional structure of an R and D staff is important in ascertaining the general tendency of development of this structure, and in providing a basis for the future training of personnel. It includes research into the composition of the staff of scientific-research institutes, and investigation of the tendencies of development of scientific specialties and professions. The interrelationship of these two aspects is vital to the understanding of the development of special branches of science, and of science as a whole.

GRA

**N75-21213#** Panstowe Wydawnictwo Naukowe, Warsaw (Poland).

**POLISH RESEARCH GUIDE**

1974 636 p Prepared for NSF and the National Library of Medicine

(TT-70-55127) Avail: NTIS HC \$13.25

A listing is presented of Polish research facilities, their various departments, subordinate institutes, and faculty members. Included are the Polish Academy of Sciences, its committees, and branches; the universities and colleges under the Ministry of Science, Higher Education, and Technology; higher schools subordinated to the Ministry of Public Health and Social Welfare; higher schools subordinated to the Ministry of Navigation, the Ministry of Culture and Art, and the Central Committee of Physical Culture and Tourism; research institutes; archives, museums, libraries, scientific societies and scientific-technical associations, and specialized scientific societies. An index of names and institutions is also presented.

M.J.S.

**N75-21214#** Joint Publications Research Service, Arlington, Va.

**TRANSLATIONS ON EASTERN EUROPE: SCIENTIFIC AFFAIRS, NO. 456**

7 Mar. 1975 26 p Transl. into ENGLISH from various East European reports

(JPRS-64270) Avail: NTIS HC \$3.75

The development and progress in the various theoretical and applied scientific disciplines and technical fields are discussed.

**N75-21791** Pennsylvania Univ., Philadelphia.

**ECONOMIC-ENVIRONMENTAL POWER DISPATCH Ph.D. Thesis**

Jacob Zahavi 1974 380 p

Avail: Univ. Microfilms Order No. 75-2795

A dispatch procedure for power generation systems which meet the demand for power while taking into account both

cost and emission considerations is developed. The control problem is formulated as a bicriterion optimization problem with two conflicting objective functions: operating costs and the combined pollution. A tradeoff curve, representing all alternative dispatch policies, is obtained for any demand level. The tradeoff curve is defined as the set of all efficient points between cost and pollution, and is computed in a parametric form by minimizing a penalty function. The economic interpretations of the tradeoff curve are discussed. An air pollution diffusion model is applied to points on the tradeoff curve to evaluate the alternative dispatch policies. Several measures, based on exposure to pollution, which serve as a first approximation to air pollution damage, are evaluated. The utility function is described by a quasi-concave function whose maximum point is found among points on the tradeoff curve. An interactive search method is devised, in order to find the dispatch policy that maximizes the utility function. The models are applied to a realistic power system. The computations are carried out for various demand levels and various weather conditions, and the comparative analysis of the results is discussed.

Dissert. Abstr.

**N75-21795\*** National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

**PLANS AND STATUS OF THE NASA-LEWIS RESEARCH CENTER WIND ENERGY PROJECT**

R. Thomas, R. Puthoff, J. Savino, and W. Johnson 1975 31 p refs Proposed for presentation at Joint Power Conf., Portland, Oreg., 28 Sep. - 1 Oct. 1975; cosponsored by IEEE and ASME  
(NASA-TM-X-71701; E-8309) Avail: NTIS HC \$3.75 CSCL 10A

Wind energy is investigated as a source of energy. The wind energy program that is managed by the NASA-Lewis Research Center is described. The Lewis Research Center's Wind Power Office, its organization, plans, and status are discussed. Major elements of the wind power project included are: an experimental 100 kW wind-turbine generator; first generation industry-built and user-operated wind turbine generators; and supporting research and technology tasks.

Author

**N75-21819#** North Carolina State Dept. of Administration, Raleigh. State Planning Div.

**A STATE ENERGY MANAGEMENT PLAN FOR NORTH CAROLINA, PHASE 1: A QUANTITIVE DESCRIPTION OF THE CURRENT SITUATION AND ANALYSIS OF THE DETERMINANTS AND CONSEQUENCES OF FUTURE ENERGY USE Final Report**

Jun. 1974 224 p refs Prepared in cooperation with Res. Triangle Inst., Durham, N. C.  
(PB-238197/8) Avail: NTIS HC \$7.25 CSCL 10A

A basic requirements scenario related to projected socio-economic growth in North Carolina is developed, assuming current trends in energy use patterns, in order to set objectives, develop policies, devise plans, establish budgets, and implement programs for future energy consumption.

GRA

**N75-21909** Louisiana State Univ., Baton Rouge. **SYSTEMS ANALYSIS OF ECOSYSTEM STABILITY Ph.D. Thesis**

Anand Janardan Apte 1974 190 p  
Avail: Univ. Microfilms Order No. 75-1910

Methods of systems analysis are applied to coastal zone management for analyzing the stability of natural ecosystems. The following are the important outputs of this research: (1) A least squares method for calibrating dynamic ecosystem models; (2) a dynamic model of an estuarine ecosystem; (3) a Liapunov stability analysis procedure was modified to predict effect of changes in forcing functions on ecosystem stability; (4) stability characteristics for two commonly used biokinetic models; (5) the impact of steady state information flow on the dynamic stability of the system; and (6) realistic stability constraints on the estuarine ecosystem model for Barataria Bay, Louisiana.

Dissert. Abstr.

**N75-22005#** Mound Lab., Miamisburg, Ohio.

**CASE STUDY: MANUFACTURING DATA BASE STRUCTURES**

E. Depew, J. Gondert, and L. Karcher 7 Nov. 1974 35 p refs  
(Contract AT-33-1-GEN-53)  
(MLM-2189(OP)) Avail: NTIS HC \$3.75

The use of the COPICS system as a physical data base design guide at Mound Laboratory is described. The way in which the data bases can be extended and redefined by logical views and user integration problems are discussed. The application established four physical data bases: warehouse, vendor, current purchase order, and purchase order history.

NSA

**N75-22184#** California Univ., Berkeley. Lawrence Berkeley Lab.

**LBL-MIS: A COMPUTER AIDED SYSTEM FOR MANAGEMENT OF RESEARCH**

R. L. Hinckley, D. F. Kane, J. Kearney-Wright, P. W. Weber, and J. L. Zimmerman Sep. 1974 50 p refs  
(Contract W-7405-eng-48)

(LBL-3089) Avail: NTIS HC \$3.75

An experimental, computer-oriented management information system, LBL-MIS, currently under development is designed to aid the management primarily of the Physics Division, but potentially to aid other LBL divisions also. The historical background to this system is included. The approach taken was to integrate the many pieces of available machine-readable management data and to heuristically approach a general management system, using the high speed CRT display as a basic I/O device.

NSA

**N75-22185#** Perceptronics, Inc., Woodland Hills, Calif.

**ADAPTIVE COMPUTER AIDING IN DYNAMIC DECISION PROCESSES: AN INITIAL STUDY IN DYNAMIC UTILITY CONVERGENCE AND DECISION AIDING Semiannual Technical Report, 1 Apr. - 30 Sep. 1974**

Richard L. Weisbrod, Kent B. Davis, Amos Freedy, and Gershon Weltman 29 Nov. 1974 59 p refs  
(Contract N00014-73-C-0286; ARPA Order 2347; NR Proj. 196-128)

(AD-A003015; PTR-1016-74-11) Avail: NTIS CSCL 05/10

One central goal of the decision theory is to provide a rational basis for decision making. The ADDAM (Adaptive Dynamic Decision Aiding Mechanism) System is designed to aid the decision maker (DM) in performing dynamic decision tasks. The ADDAM system provides real-time dynamic assessments of multiple utilities as the DM performs a dynamic decision task. ADDAM continuously tracks the DM's decision responses and uses adaptive pattern classification techniques to learn his utilities for their outcomes. These Utilities are then used to provide decision aiding of various forms, including recommendation of maximum expected utility decisions. The results of an initial experiment to investigate the effectiveness of the adaptive decision modeling system and the DM's acceptance of the model as a normative basis for decision making are reported.

GRA

**N75-22382#** Wisconsin Univ., Madison. Mathematics Research Center.

**MODELLING THE LONG RANGE DEVELOPMENT OF THE INTERMEDIATE CHEMICALS INDUSTRY**

Dale F. Rudd Oct. 1974 74 p refs  
(Contract DA-31-124-AROD(4)-462)

(AD-A001661/8; MRC-TSR-1471) Avail: NTIS CSCL 07A

The report discusses modelling of the intermediate chemicals industry. Economics, chemistry, engineering, and marketing are discussed in relation to each other in considering projections of industrial development.

GRA

**N75-22720#** Canada Centre for Remote Sensing, Ottawa (Ontario).

**ERTS IMAGERY INTERPRETATION PACKAGE: SUGGESTIONS FOR LABORATORY DESIGN**

T. T. Alfoldi and R. A. Ryerson Nov. 1973 24 p refs  
(PB-238843/7; TN-73-4) Avail: NTIS HC \$3.25 CSCL 14B

Information on equipment and furniture required to make the maximum use of ERTS (Earth Resources Technology Satellite) and related airborne data, in a non-digital image analysis laboratory is presented. Exclusive of building rent, services and salaries, the incremental cost would be in the order of \$50,000. A second laboratory for a higher budget is also described. GRA

**N75-22892# Coastal Zone Management Inst., Sandwich, Mass.**  
**COASTAL ZONE MANAGEMENT: THE PROCESS OF PROGRAM DEVELOPMENT**

John Armstrong, Harold Bissell, Russell Davenport, Joel Goodman, Marc Hershman, Jens Sorensen, Lucy Sloan, and Daniel Wormhoudt Nov. 1974 391 p refs  
(Grant NOAA-3-37157)

(COM-75-50066/0; NOAA-74121703) Avail: NTIS MF \$2.25; HC \$10.00 available from Coastal Zone Management Inst., P. O. Box 221, Sandwich, Mass. 02563 CSCL 13B

A technical guide for state and local officials involved in the development and implementation of coastal zone management programs is presented. It is organized in such a way as to parallel the requirements for management program development which are contained in the Coastal Zone Management Act of 1972 and the Section 305 regulations published November 29, 1973, in the Federal Register. GRA

**N75-22896# Massachusetts Inst. of Tech., Cambridge. Sea Grant Project Office.**

**MODELING AND GAMING FOR REGIONAL PLANNING, A MAINE STUDY**

Charles Kaminski Sep. 1974 184 p refs  
(Grant NOAA-NG-43-72)  
(COM-75-10188/1; MITSG-74-25; NOAA-74122604) Avail: NTIS HC \$7.00 CSCL 13B

A regional development model and a game are presented as aids in regional planning with particular application to the coastal area of Maine. The game described here was developed primarily to illustrate the application of gaming techniques to the planning process. The game was designed to reflect actual conditions in the coastal area of Maine, and its outcomes may have relevance to actual planning in that region. GRA

**N75-22927# Hudson Inst., Inc., Croton-on-Hudson, N.Y.**  
**A STUDY OF ENERGY SYSTEMS COMMAND, CONTROL AND COMMUNICATION FOR ENERGY CRISIS MANAGEMENT**

Nicholas Fedoruk, Uzi Arda, Herman Kahn, Michael C. Macrakis, and Barry J. Mernoff Oct. 1974 142 p refs Sponsored by ERDA  
(PB-239290/0; HI-2132-RR; NSF/RA/N-74-164) Avail: NTIS HC \$5.75 CSCL 10A

An energy crisis management system which provides contingency plans and capabilities for far-fetched events whose impact could be very significant for the nation is considered. GRA

**N75-22949# EcoSystems, Inc., McLean, Va.**  
**AN IMPACT ASSESSMENT OF THREE FEDERAL REGULATIONS Final Report**

Lawrence Boesch, George Kelly, Stephen Noren, Kurt Stehling, and Robert Strieter Oct. 1974 169 p refs  
(Contract NSF C-823)  
(PB-238641/5) Avail: NTIS HC \$6.25 CSCL 13B

This is the final report of study examining the impact of Federal regulatory actions upon regulated industry, with particular emphasis being given to those impacts which affect technological innovation in the industry. The underlying objective of the study was to identify possible incentive actions available to the Federal government which might magnify favorable effects or reduce adverse impacts. The study examined the origins, intent, mechanisms, and effects of the specific regulations on automotive emissions, SO<sub>2</sub> emissions from electric power generating plants, and new drugs. Discussions were held with a broad range of experts in industry, industrial associations, government and academic community. GRA

**N75-23364 Joint Publications Research Service, Arlington, Va.**  
**APPLICATION OF PERT METHODS DISCUSSED**

Jerzy Wyszomirski *In its Transl. on Eastern Europe: Sci. Affairs, No. 462 (JPRS-64632) 25 Apr. 1975 p 4-8 Transl. into ENGLISH from Informatyka (Warsaw), no. 1, Jan. 1975 p 21-22*

The PERT (Program Evaluation and Review Technique) is applied to the construction of industrial machine plants and discussed in terms of cost. It is concluded that the method is cost effective. J.M.S.

**N75-23365 Joint Publications Research Service, Arlington, Va.**  
**INSUFFICIENT UTILIZATION OF SCIENTIFIC ADVANCES**

Sergiu Tamas *In its Transl. on Eastern Europe: Sci. Affairs, No. 462 (JPRS-64632) 25 Apr. 1975 p 9-18 Transl. into ENGLISH from ERA Socialista (Bucharest), no. 6, Mar. 1975 p 9-13*

Sociopolitical and economic management is discussed in terms of the scientific and technological revolution in Romania. It is indicated that the efficiency of the economic and social processes must be increased. The following factors are discussed: reduction of resources, raw materials, and energy on a world-wide level, production based on biological procedures, reduction of the research to production cycles, rise in labor productivity and reduction in consumption; and the principle of recycling. J.M.S.

**N75-23367# National Aeronautics and Space Administration, Washington, D.C.**

**HANDBOOK FOR PREPARATION OF WORK BREAKDOWN STRUCTURES**

Feb. 1975 26 p  
(NHB-5610.1) Avail: NTIS MF \$2.25; SOD HC \$0.80 CSCL 05A

Guidelines are presented for development of work breakdown structures (WBS) for NASA programs, projects, and contracts. The WBS were developed by starting with the end objective required and successively subdividing it into manageable components in terms of size and complexity, such as program, project, system, subsystems, components, tasks, subtasks, and work elements. M.J.S.

**N75-23368 Colorado Univ., Boulder.**

**GAP THEORY: A VEHICLE MANAGEMENT TECHNIQUE FOR RESOLVING MERGE CONFLICTS IN PERSONAL RAPID TRANSIT SYSTEMS Ph.D. Thesis**

Dennis Allen Gary 1974 330 p  
Avail: Univ. Microfilms Order No. 75-3781

The theoretical analysis of gap motions along a linear section of a PRT guideway was dealt with. Each of the four basic gap motions is studied with respect to its implications on system variables such as energy consumption, customer service, and the maintenance of a safe operating headway. Then, the concept of a queue of gaps is introduced by a combined use of the storage and quasi-creation motions. Some applications of gap theory to PRT systems were also studied. In the simplest cases of local applications to a single guideway, analytical models based on queueing theory are developed. In more involved localized intersection applications, algorithms are provided for typical X-, symmetrical Y-, and unsymmetrical Y- intersections. Finally, a preliminary study of the application of gap theory to the proposed Denver PRT system leads to the conclusion that current technology severely limits the theory's practical use. Dissert. Abstr.

**N75-23388# Committee on Aeronautical and Space Sciences (U. S. Senate).**

**NASA AUTHORIZATION FOR FISCAL YEAR 1976 AND THE TRANSITION PERIOD, PART 3**

Washington GPO 1975 746 p Hearings on S. 573 before Comm. on Aeron. and Space Sci., 94th Congr., 1st Sess., 3 and 11 Mar. 1975

(GPO-50-797) Avail: SOD HC \$6.05

Various NASA Programs for the fiscal year 1976 are described.

The following programs are included: pollution monitoring; earth resources survey program; technology for fuel conservation; weather and climate program; space processing; and technology for earth orbital transportation system. Illustrations are given.

J.M.S.

**N75-23618# Department of Transportation, Washington, D.C.  
THE AIRPORT/URBAN INTERFACE Final Report, Jul. 1973 - Jun. 1974**

Robert L. Paullin Jul. 1974 61 p refs  
(PB-238914/6; DOT-TST-75-12) Avail: NTIS HC \$4.25 CSCL 13B

A review was made of airport-urban interactions. Severe congestion at major airports is discussed as the limiting factor to increased capacity in the mid 1980's unless relieving action is taken. Existing DOT programs are examined and several suggestions are made for increased intermodal coordination as well as for specific R and D efforts. The need for intermodal planning is noted with priority given to solutions which minimize adverse environmental effects at the interface. GRA

**N75-23644 \*# National Aeronautics and Space Administration, Washington, D.C.**

**REPORT TO THE ADMINISTRATOR BY THE NASA AEROSPACE SAFETY ADVISORY PANEL ON THE SKYLAB PROGRAM. VOLUME 1: SUMMARY REPORT**

Jan. 1973 42 p 2 Vol.  
(NASA-TM-X-66814) Avail: NTIS HC \$3.75 CSCL 22B

Contractor and NASA technical management for the development and manufacture of the Skylab modules is reviewed with emphasis on the following management controls: configuration and interface management; vendor control; and quality control of workmanship. A review of the modified two-stage Saturn V launch vehicle which focused on modifications to accommodate the Skylab payload; resolution of prior flight anomalies; and changes in personnel and management systems is presented along with an evaluation of the possible age-life and storage problems for the Saturn 1-B launch vehicle. The NASA program management's visibility and control of contractor operations, systems engineering and integration, the review process for the evaluation of design and flight hardware, and the planning process for mission operations are investigated. It is concluded that the technical management system for development and fabrication of the modules, spacecraft, and launch vehicles, the process of design and hardware acceptance reviews, and the risk assessment activities are satisfactory. It is indicated that checkout activity, integrated testing, and preparations for and execution of mission operation require management attention. J.M.S.

**N75-23645 \*# National Aeronautics and Space Administration, Washington, D.C.**

**REPORT TO THE ADMINISTRATOR BY THE NASA AEROSPACE SAFETY ADVISORY PANEL ON THE SKYLAB PROGRAM. VOLUME 2: PROGRAM IMPLEMENTATION AND MATURITY**

Jan. 1973 180 p refs 2 Vol.  
(NASA-TM-X-66815) Avail: NTIS HC \$7.00 CSCL 22B

Results of the design and manufacturing reviews on the maturity of the Skylab modules are presented along with results of investigations on the scope of the cluster risk assessment efforts. The technical management system and its capability to assess and resolve problems are studied. Author

**N75-23728# California Univ., Livermore. Lawrence Livermore Lab.**

**AUTOMATION TRENDS**

J. W. Frazer 6 Apr. 1974 11 p refs Presented at the 25th Pittsburgh Conf. on Analytical Chem. and Appl. Spectry., Cleveland, 4 Mar. 1974 Sponsored by ERDA  
(UCRL-75320; Conf-740314-5) Avail: NTIS HC \$3.25

Digital computer automation and related technological breakthroughs are forces resulting in changes in chemical and physical measurements. The important features of these complex measurements are occurring in process control in manufacturing processes; quality control; problems associated

with the control of pollution; and clinical analysis. It is predicted that instruments will be interconnected in a distributive and/or hierarchical computer system due to the need for transmission of information, instrument control from remote sites, for software development, and improved scientific management. The methodology for future instrumentation is followed for the nuclear fuel industry. NSA

**N75-24072 \*# National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, Md.**

**APPLICATIONS OF REMOTE SENSING TO WATERSHED MANAGEMENT**

Albert Rango Apr. 1975 20 p refs Presented for presentation at Symp. on Watershed Management, Am. Soc. of Civil Engr., Logan, Utah, 11-13 Aug. 1975 Submitted for publication  
(NASA-TM-X-70896; X-913-75-86) Avail: NTIS HC \$3.25 CSCL 08H

Aircraft and satellite remote sensing systems which are capable of contributing to watershed management are described and include: the multispectral scanner subsystem on LANDSAT and the basic multispectral camera array flown on high altitude aircraft such as the U-2. Various aspects of watershed management investigated by remote sensing systems are discussed. Major areas included are: snow mapping, surface water inventories, flood management, hydrologic land use monitoring, and watershed modeling. It is indicated that technological advances in remote sensing of hydrological data must be coupled with an expansion of awareness and training in remote sensing techniques of the watershed management community.

Author

**N75-24090# Meta System, Inc., Cambridge, Mass.**

**AN OPERATIONAL FRAMEWORK FOR COASTAL ZONE MANAGEMENT PLANNING**

Jan. 1975 284 p refs  
(Contract DI-14-31-0001-4211)  
(PB-239519/2; W75-04558; OWRT-C-5208(4211)(1)) Avail:  
NTIS HC \$8.75 CSCL 13B

Three sets of formal models were constructed to aid planning. The first set of models checks for consistency between the overall demands placed upon the coastal zone and the environmental carrying capacity of the zone. The second set of models deals with identifying the appropriate goals to be used at the various levels in the planning hierarchy. The third set of models develops a multilevel planning algorithm to provide for efficient transfer of information between the levels of government involved in the coastal zone management process. The models were tested on the coastal zone of the state of Connecticut. GRA

**N75-24123# Committee of Conference (U. S. Congress).**

**ENERGY REORGANIZATION ACT OF 1974**

Washington GPO 9 Oct. 1974 39 p refs Conference Rept. to accompany H.R. 11510, 93d Congr., 2d Sess., 9 Oct. 1974 (S-Rept-93-1252; GPO-38-010) Avail: US Capitol, Senate Document Room

The formation of the Energy Research and Development Administration is discussed in detail, along with a Nuclear Energy Commission. Topics included are duties of the Administration, personnel, appropriations, personnel qualifications, and research activities.

M.J.S.

**N75-24124# Committee on Government Operations (U. S. Senate).**

**ENERGY REORGANIZATION ACT OF 1974**

Washington GPO 1974 118 p refs Rept. to accompany S. 2744 presented by the Comm. on Government Operations at the 93d Congr., 2d Sess., 27 Jun. 1974  
(S-Rept-93-980; GPO-34-980) Avail: SOD HC \$1.20

A Congressional Report is presented to reorganize and consolidate certain functions of the Federal Government in a new Energy Research and Development Administration. A new nuclear safety and licensing commission is discussed in order to promote more efficient management of such functions. M.C.F.

**N75-24139#** Systems Control, Inc., Palo Alto, Calif.  
**ELECTRIC POWER SYSTEMS ANALYSIS RESEARCH**  
John Peschon and Leif Isaksen Jul. 1974 249 p refs  
(Contract NSF C-756)  
(PB-239236/3; NSF/RA/N-74-171) Avail: NTIS HC \$7.50  
CSCL 09C

The special systems analysis needs of large-scale interconnected electric power systems are considered. Procedures to encourage and facilitate the implementation of successful research projects, through more effective professional interactions, are investigated. Technical descriptions of eleven major functional activity areas are presented in order to provide a structured overview of the problems and associated systems analysis research needs of interconnected electric power systems. Specific research opportunities are summarized. GRA

**N75-24140#** Massachusetts Inst. of Tech., Cambridge. Energy Lab.  
**ENERGY SYSTEM MODELING-INTERFUEL COMPETITION Progress Report**  
M. L. Baughman and P. L. Joskow Feb. 1974 28 p refs  
(Grant NSF GI-39150)  
(PB-239292/6; NSF/RA/N-74-165) Avail: NTIS HC \$3.75  
CSCL 21D

The Energy System Modeling program addresses issues of interfuel substitution on the national and state level. Construction of policy planning tools that can be used for analysis and evaluation of policies that impinge upon the economics and investment strategies of suppliers and/or consumers of various energy producing and consuming subsectors is discussed. GRA

**N75-24143#** Office of Oil and Gas, Washington, D.C.  
**VULNERABILITY OF NATURAL GAS SYSTEMS Final Report**  
Maynard M. Stephens and Joseph A. Golasinski Jun. 1974  
130 p refs  
(AD-A007583; OCD-PS-66-100) Avail: NTIS CSCL 21/4

This report describes the general manner and pattern in which the natural gas industry operates within the U.S. and describes in detail the transmission aspect of the system within the region encompassing all of Louisiana and thirteen counties of Mississippi. It brings together a description of all segments of the industry, relates some of the operational problems, and projects, in some instances, future problems as they relate to national security and emergency planning. GRA

**N75-24169#** Research Triangle Inst., Durham, N.C. Office of Air Quality Planning and Standards.  
**GUIDELINES FOR AIR QUALITY MAINTENANCE PLANNING AND ANALYSIS. VOLUME 2. PLAN PREPARATION Final Report**  
Jul. 1974 158 p ref Prepared in cooperation with EPA, Research Triangle Park, N.C.  
(Contract EPA-68-02-1386)  
(PB-237581/4; EPA-450/4-74-002; OAQPS-1.2-021-Vol-2) Avail: NTIS HC \$6.25 CSCL 13B

The procedures to be followed and analytical methods to be employed in developing an air quality maintenance plan are described for those areas that have been identified as having the potential of exceeding the national ambient air quality standards, because of present air quality or projected growth. Procedures are described for projecting air quality through 1985, estimating associated air quality, and identifying and quantifying any potential air quality maintenance problem. Using this analysis as a base, procedures for developing alternative maintenance strategies and selecting a feasible strategy are presented. Methods of evaluating social and economic impact of maintenance strategies are included. GRA

**N75-24170#** Environmental Protection Agency, Research Triangle Park, N.C. Office of Air Quality Planning and Standards.  
**GUIDELINES FOR AIR QUALITY MAINTENANCE PLANNING AND ANALYSIS. VOLUME 3: CONTROL STRATEGIES Final Report**

Jul. 1974 189 p ref Prepared in cooperation with Research Triangle Inst., Durham, N. C. and PEDCO-Environmental Specialists, Inc., Cincinnati 12 Vol.  
(Contract EPA-68-02-1386)  
(PB-237582/2; EPA-450/4-74-003; OAQPS-1.2-022-Vol-3) Avail: NTIS HC \$7.00 CSCL 13B

Measures used or proposed for use in maintaining air quality standards in regional areas are described. Information is assembled on current applications, recommendations for implementing, estimates of potential effectiveness, and conditions under which the measure is most applicable. Many of the measures are based on land-use or regional planning and are concerned with new sources of emissions. Emission allocation procedures, emission density zoning, zoning approvals, transportation controls, emission charges, transfer of emission source location, indirect source review, and environmental impact statements. GRA

**N75-24182#** Northeastern Illinois Planning Commission, Chicago.  
**BIOGRAPHY ON THE PLANNING ASPECTS OF AIR POLLUTION CONTROL, SUMMARY AND EVALUATION**  
Wm. J. Pelle, Jr. 18 Dec. 1974 28 p refs Sponsored in part by PHS  
(PB-238927/8) Avail: NTIS HC \$3.75 CSCL 13B

An examination is made of the literature covering planning principles in terms of their applicability to air pollution control. Subject matter is broken down into six major subheadings: elementary microclimatological considerations in city planning; relationship of air pollution to the 'image' of the city; effects of 'green areas' in air pollution control; relationship of transportation to air pollution; relationship of air pollution control to development patterns; and regulation of pollution through performance standards and densities of population, industry, and traffic. GRA

**N75-24186#** Informatics, Inc., Rockville, Md.  
**CIVIL AVIATION STUDIES AND INTERAGENCY COORDINATING ORGANIZATIONS, VOLUME 1**  
Carl Modig Dec. 1974 165 p refs 2 Vol.  
(Contract EPA-68-01-2229)  
(PB-239344/5; EPA-550/9-74-019A-Vol-1) Avail: NTIS HC \$6.25 CSCL 01C

Federal organizations set up to coordinate civil aviation policy are described, including those dealing with the aircraft noise problem and commissions and agency task groups who studied civil aviation problems. The evolution of these organizations from after World War II to the present is traced. It is concluded that: (1) in the early 1960's there was no institution actively coordinating federal aircraft noise abatement activities; (2) much of the impetus for better coordination has come from Congress; (3) successful coordination requires high-level agency and Administration support; (4) the host agency may have difficulty securing cooperation of other agencies. GRA

**N75-24187#** Informatics, Inc., Rockville, Md.  
**CIVIL AVIATION STUDIES AND INTERAGENCY COORDINATING ORGANIZATIONS, VOLUME 2: APPENDICES**  
Carl Modig Dec. 1974 180 p refs 2 Vol.  
(Contract EPA-550/9-74-019B)  
(PB-239345/2; EPA-550/9-74-019B-Vol-2) Avail: NTIS HC \$7.00 CSCL 01C

Source documents are reproduced in whole or in part to provide more detailed information on various federal organizations set up to coordinate or study civil aviation policy, including those dealing with the aircraft noise problem. GRA

**N75-24196#** Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.  
**PRELIMINARY ASSESSMENT OF THE ENVIRONMENTAL PROBLEMS ASSOCIATED WITH VINYL CHLORIDE AND POLYVINYL CHLORIDE Interim Report**  
Sep. 1974 106 p refs  
(PB-239110/0; EPA-560/4-74-001) Avail: NTIS HC \$5.25 CSCL 13B

The report summarizes the activities and findings of a task force to assess the character and extent of the problems associated with the production, distribution, use, and disposal of vinyl chloride and polyvinyl chloride. The first Section discusses the nature and magnitude of problems. The second discusses previous and planned activities within the Federal Government of particular significance and the role of industry. The report concludes with some specific recommendations. GRA

**N75-24528#** Texas Univ., Austin. Computer-Assisted Instruction Lab.

**ON-LINE MANAGEMENT INFORMATION SYSTEM FEASIBILITY IN AN R AND D ENVIRONMENT** Final Report, 1 Sep. 1973 - 30 Jun. 1974

Harold F. Neil, Jr., Mary E. Walker, George H. Walther, and Wilson A. Judd Dec. 1974 83 p refs  
(Contract F41609-73-C-0019; AF Proj. 7000)  
(AD-A007723; AFHRL-TR-74-98) Avail: NTIS CSCL 05/1

The objectives of this study consisted of three stipulated tasks. These tasks were: (1) to conduct and document a thorough, comprehensive review of existing literature which addresses itself to implementation and evaluation of on-line data management systems; (2a) to analyze methods currently in existence within the Air Force Human Resources Laboratory (AFHRL) for processing management and planning information; and (2b) to analyze the information needs of a designated subset within the AFHRL; (3a) to develop implementation and evaluation strategies; (3b) to demonstrate and evaluate the feasibility of the strategies and techniques developed. The interim report discussed tasks (1) and (2) and provided baseline data for task (3). This final report will address itself to objective (3). GRA

**N75-24547#** Massachusetts Inst. of Tech., Cambridge. School of Engineering.

**EVALUATION OF POLICY RELATED RESEARCH IN THE FIELD OF MUNICIPAL SOLID WASTE MANAGEMENT** Final Report

James F. Hudson, Frederick P. Gross, David Gordon Wilson, and David H. Marks Sep. 1974 388 p refs  
(Grant NSF GI-39278)  
(PB-239375/9; R74-56; NSF/RA/S-74-009) Avail: NTIS HC \$10.25 CSCL 13B

An evaluation was made of research on local solid waste management problems. The work is one of a series of projects and is primarily concerned with residential waste. Research in the solid waste field is discussed and evaluated, and information is given on the accuracy, availability, and potential usefulness of the research results. A complete bibliography is included. The presentation is structured into several areas related to issues of concern to local system managers, owners, and elected officials, including the choice of type of service to be provided, the setting of work procedures, productivity, regionalization, scale of system operation, and the choice of technology for collection, processing, and disposal. GRA

**N75-24694#** Air Force Flight Dynamics Lab., Wright-Patterson AFB, Ohio.

**AIR FORCE FLIGHT DYNAMICS LABORATORY FISCAL YEAR 1976 TECHNICAL OBJECTIVE DOCUMENT (TOD)** Jan. 1975 60 p Supersedes AFFDL-TR-73-41  
(AD-A008087; AFFDL-TR-74-156; AFFDL-TR-73-41) Avail: NTIS CSCL 01/3

The document presents an overview of the six Technology Objectives and supporting technical goals for each that together constitute forward thinking of the Air Force Flight Dynamics Laboratory. Specific points of contact are identified at the end of each TO section. Information is largely based on the AFFDL fiscal 1976 technology plan omitting specific funding and timing information of an Official Use Only nature. Technology Objectives are described for flight vehicle structures, subsystems, flight control, flight mechanics, dynamics and technology integration, spanning the FY 75 to FY 82 time period. GRA

**N75-24715#** Planar Corp., Alexandria, Va.

**IMPLICATIONS OF AUTOMATION FOR OPERATING AND**

**STAFFING AN ADVANCED AIR TRAFFIC MANAGEMENT SYSTEM** Final Report, Jan. - Jun. 1974

Larry L. Jenny and Kenneth A. Lawrence Aug. 1974 81 p  
(Contracts DOT-TS-7989; DOT-TS-8402)  
(PB-238423/8; DOT-TSC-OST-74-32) Avail: NTIS HC \$4.75 CSCL 17G

The role of the air traffic controller in future system operations is expected to be substantially affected by the introduction of new automated features. A system concept in which most surveillance, control and communication tasks would be assigned to machine elements is discussed. The implications of a high level of automation in terms of manpower requirements and operational procedures are examined. GRA

**N75-24987#** Joint Publications Research Service, Arlington, Va.

**TRANSLATIONS ON EASTERN EUROPE, SCIENTIFIC AFFAIRS, NO. 468**

16 Jun. 1975 34 p refs Transl. into ENGLISH from East European journals  
(JPRS-65015) Avail: NTIS HC \$3.75

The development of and progress in the various theoretical and applied scientific disciplines and technical fields is discussed. The administration, structure, personnel, and research plans of leading East European scientific organizations and institutions are described. Topics include the following: application of lasers for metal cutting in Bulgaria; Baltic geophysical research; brucellosis incidence in Albania; digital transmission of pulse code modulation signals by microwave relays; and, mathematics research in East Germany. Author

**N75-25009#** Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.

**SOCIALISTIC COMMUNICATIONS**

A. Hudec 18 Mar. 1975 8 p Transl. into ENGLISH from PTT Revue (Czechoslovakia), v. 4, no. 5, 1973 p 6  
(AD-A007942; FTD-HC-23-0846-75) Avail: NTIS CSCL 17/2

The development of telecommunications and the improvement of postal services in socialist countries are discussed. Management planning and control were analyzed. M.J.S.

**N75-25263\***# Ecosystems International, Inc., Gambrills, Md.

**IMPACT OF REMOTE SENSING UPON THE PLANNING, MANAGEMENT, AND DEVELOPMENT OF WATER RESOURCES** Final Report, Jun. 1974 - Jun. 1975

P. A. Castruccio, H. L. Loats, T. R. Fowler, and S. L. Frech May 1975 100 p refs  
(Contract NAS5-20567)  
(NASA-CR-143810; ECO-75:C-3) Avail: NTIS HC \$4.75 CSCL 08H

Principal water resources users were surveyed to determine the impact of remote data streams on hydrologic computer models. Analysis of responses demonstrated that: most water resources effort suitable to remote sensing inputs is conducted through federal agencies or through federally stimulated research; and, most hydrologic models suitable to remote sensing data are federally developed. Computer usage by major water resources users was analyzed to determine the trends of usage and costs for the principal hydrologic users/models. The laws and empirical relationships governing the growth of the data processing loads were described and applied to project the future data loads. Data loads for ERTS CCT image processing were computed and projected through the 1985 era. Author

**N75-25294#** Committee on Finance (U. S. Senate).

**WORLD OIL DEVELOPMENTS AND US OIL IMPORT POLICIES**

Washington GPO 1973 158 p refs Rept. presented by the US Tariff Commission to the Comm. on Finance, 93d Congr., 1st Sess., 12 Dec. 1973 Prepared by Tariff Commission (GPO-22-893) Avail: SOD HC \$1.35

This report responds to a request by the Senate Committee on Finance, dated March 16, 1970, that the Tariff Commission give a full description of all considerations which should be weighed in reaching a decision on the question of substituting tariffs for quotas to control oil imports. The committee suggested that the commission consider costs of production in major exporting countries, tanker rates, most-favored-nation obligations of the United States, and the effect on U.S. revenues and the U.S. consumer of various tax and royalty adjustments by petroleum exporting countries.

Author

**N75-25329# Battelle Columbus Labs., Ohio.**

**VARIOUS RESEARCH TASKS RELATED TO ENERGY INFORMATION AND DATA ACTIVITIES: TASK 4 PRIORITIES ANALYSIS Final Report**

David M. Liston, Jr., John W. Murdock, and Immanuel J. Klette  
15 Nov. 1974 42 p  
(Grant NSF GN-42243)

(PB-240424/2) Avail: NTIS HC \$3.75 CSCL 05D

Priority actions for NSF to consider are defined in the field of energy research and development information. Energy policy, science policy, and information policy concepts were summarized and integrated to form a summary of energy research and development information policy concepts.

GRA

**N75-25331# Federal Energy Administration, Washington, D.C. FIVE YEAR PROGRAM PLANNING DOCUMENT FOR END USE ENERGY CONSERVATION, RESEARCH, DEVELOPMENT, AND DEMONSTRATION**

Douglas C. Bauer Jun. 1974 259 p refs  
(PB-240406/9; FEA/PD-226-D) Avail: NTIS HC \$8.50 CSCL 05A

The nation's resources are organized into task forces under national government leadership. Projects and funding needed for energy conservation studies in areas of transportation, industry, and building research are included.

GRA

**N75-25340# Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.**

**ANALYSIS MODELS FOR SOLID WASTE COLLECTION, VOLUME 2**

James F. Hudson, Donald S. Grossman, and David H. Marks  
Jan. 1975 225 p refs  
(Grant EPA-801633)

(PB-239494/8; EPA-670/2-75-026b-Vol-2) Avail: NTIS HC \$7.25 CSCL 13B

Analytic models are developed as aids in decision making at many points in the solid waste collection and haul system. Models for daily operating policy include breakdown or excess load, maintenance, and stochastic influences such as weather. Longer range issues include level of service, equipment, crew size, and work rules. The report develops an econometric model for prediction of waste output from census data for districts and daily collection areas. Documentation of the computer programs used and developed in the course of the work as well as the appendices to the main volume are reported.

GRA

**N75-25344# Environmental Research and Technology, Inc., Lexington, Mass.**

**HACKENSACK MEADOWLANDS AIR POLLUTION STUDY: EVALUATION AND RANKING OF LAND USE PLANS Final Report**

Byron H. Willis Nov. 1973 278 p refs Prepared in cooperation with New Jersey Dept. of Environmental Protection, Trenton  
(Contract EPA-71-39)  
(PB-238606/8; ERT-P-244-3; EPA-450/3-74-056-d) Avail: NTIS HC \$8.75 CSCL 13B

This report is the third of the five task reports. Its purpose is to describe the procedures developed for incorporating air pollution considerations into the formulation, evaluation, and ranking of alternative urban land use and transportation system

plans and policies, and to describe the results of the evaluation and ranking of four alternative land use plans for 1990 for the New Jersey Hackensack Meadowlands.

GRA

**N75-25615# Naval Underwater Systems Center, Newport, R.I. FUNCTIONAL DESCRIPTION OF AN AUTOMATED CONFIGURATION MANAGEMENT INFORMATION SYSTEM**

David A. Cobb 11 Feb. 1975 44 p

(AD-A008336; NUSC-TD-4602) Avail: NTIS CSCL 09/2

The capabilities of the existing computerized configuration management information system are specified. The system is viewed as it appears to the user: a set of report products in response to the informational needs of the users.

GRA

**N75-25756# Syracuse Univ., N.Y.**

**SYRACUSE/NASA PROGRAM: A HISTORICAL CRITIQUE: MULTIDISCIPLINARY STUDIES IN MANAGEMENT AND DEVELOPMENT PROGRAMS IN THE PUBLIC SECTOR Final Report**

Martin E. Barzelay Aug. 1974 39 p refs  
(Grant NGL-33-022-090)

(NASA-CR-142863) Avail: NTIS HC \$3.75 CSCL 05A

A historical critique is presented of the Syracuse/NASA program on management and development programs. Brief summaries are included of each of the major projects undertaken, including identification of the principal investigators and the university departments and disciplines involved.

Author

**N75-25757# Army Foreign Science and Technology Center, Charlottesville, Va.**

**AN ANALYTICAL APPROACH TO MAKING UP PLANS OF THEMES OF SCIENTIFIC RESEARCH INSTITUTES**

G. M. Dobrov, T. A. Kukhtenko, and T. I. Shchedrina 15 Jun. 1974 25 p refs Transl. into ENGLISH from Nauk. Inform. Resp. Mezhdunarodstvennyi Sb. (USSR), v. 58, no. 7, 1972 p 3-14

(AD-A008344; FSTC-HT-23-0113-74) Avail: NTIS CSCL 05/1

An analytical approach for compiling plans in scientific research institutes shows that the question is important economically. One must take into account various factors before deciding which plans to use for research. Manpower, expenses and other considerations must be evaluated and one must also bear in mind what will be the results of taking a certain decision, and will the ends justify the means.

GRA

**N75-25758# Office of the Chief of Naval Operations, Washington, D.C.**

**VISIBILITY AND MANAGEMENT OF SUPPORT COSTS**

F. Dale Smith, Thomas King, James W. Prichard, A. Derr, and Kenneth E. Marks 3 Apr. 1975 200 p refs  
(AD-A008334) Avail: NTIS CSCL 15/5

The study addresses the means to provide management information concerning the costs of operation and support experienced for aircraft weapon systems. The study concludes that two separate MIS (Management Information Systems) are required to meet detailed requirements stated by the DOD Management by Objectives program. It recommends establishment of one MIS to collect costs at the complete weapon system level for selected cost elements which span the full spectrum of operating and support functions. It also recommends further development of an existing prototype MIS based on 3M data to collect detailed costs of maintenance within the weapon system work breakdown structure.

GRA

**N75-25759# Bendix Corp., Cocoa Beach, Fla. Launch Support Div.**

**OSHA SAFETY AND HEALTH TRAINING GUIDELINES FOR GENERAL INDUSTRY, VOLUME 1 Final Report**

D. E. Lowry and H. E. Adams Feb. 1975 117 p

(PB-239310/6; DOL-L73-142-1) Avail: NTIS HC \$5.25 HC also available from NTIS \$11.00/set of 3 reports as

PB-239309-SET CSCL 06J

Training guidelines are presented to meet the training requirements contained in the Occupational Safety and Health

Standards. Title 29, Code of Federal Regulations, promulgated by the Department of Labor. Occupational Safety and Health Administration. Guidelines are presented in three separate volumes to meet standards for general industry, construction ideals with those standards contained in Part 1910. Occupational Safety and Health Standards for General Industry. GRA

**N75-25760#** Bendix Corp., Cocoa Beach, Fla. Launch Support Div.

**OSHA SAFETY AND HEALTH TRAINING GUIDELINES FOR MARITIME OPERATIONS, VOLUME 2 Final Report**

D. E. Lowry and H. E. Adams Feb. 1975 44 p 3 Vol. (PB-239311/4; DOL-L73-142-2) Avail: NTIS HC \$3.75 HC also available from NTIS \$11.00/set of 3 reports as PB-239309-SET CSCL 06J

The volume deals with those standards contained in Parts 1915-19. Occupational Safety and Health Standards for Maritime employment. GRA

**N75-25761#** Bendix Corp., Cocoa Beach, Fla. Launch Support Div.

**OSHA SAFETY AND HEALTH TRAINING GUIDELINES FOR CONSTRUCTION, VOLUME 3 Final Report**

D. E. Lowry and H. E. Adams Feb. 1975 71 p 3 Vol. (PB-239312/2; DOL-L73-142-3) Avail: NTIS HC \$4.25 HC also available from NTIS \$11.00/set of 3 reports as PB-239309-SET CSCL 06J

The volume deals with those standards contained in Part 1926. Occupational Safety and Health Standards for Construction. GRA

**N75-25762#** Information Systems Center, Cincinnati, Ohio. **MANAGING HUMAN SERVICES: SOME THEORETICAL OBSERVATIONS AND A PRACTICAL MODEL FOR BUDGET DECISION MAKING**

R. D. Smalley Aug. 1973 57 p (Grant SRS-12-55934) (PB-239814/7; ISC-090473) Avail: NTIS HC \$4.25 CSCL 05K

The relationship of basic values to managerial technology in formulating policies for the delivery of social services is discussed. Then considering budgetary decisions, the theoretical framework for a mathematical decision model is explained. GRA

**N75-25763#** National Planning Association, Washington, D.C. **ASSESSING THE IMPACT OF CHANGES IN NATIONAL PRIORITIES FOR THE UTILIZATION OF SCIENTISTS AND ENGINEERS Final Report**

Leonard A. Lecht, Ivars Gutmanis, and Richard J. Rosen Feb. 1974 136 p refs (Grant NSF GR-32464) (PB-239752/9) Avail: NTIS HC \$5.75 CSCL 05I

Changes in national priorities can have an important bearing on requirements for scientists and engineers. This report represents the findings of a pilot study to assess the potentials for anticipating the scientific manpower requirements likely to be generated by expenditures in five major industries for the abatement of air, water, and solid-waste pollution in the private economy in the next 5 or 10 years. The essential element in the study is the derivations of manpower requirements from the estimated levels of expenditures for plant and equipment, for operations and maintenance, and for research and development related to differences in the priorities assigned to pollution control in the next decade. GRA

**N75-25771#** Information Systems Center, Cincinnati, Ohio. **THE DEVELOPMENT OF A COMPUTER BASED INFORMATION SYSTEM FOR SOCIAL SERVICE AGENCIES**

Robert E. Quinn and Donald B. Walker Aug. 1973 107 p (Grant SRS-11-55934) (PB-239816/2; ISC-082273) Avail: NTIS HC \$5.25 CSCL 05K

The document, part of a series on the role of information systems in the field of human services, is concerned with the development of such a system for social services, researching

its historical development and providing recommendations for planners of future systems. Sample input forms and printouts used in that system are included. GRA

**N75-25777#** Committee of Conference (U. S. Congress).

**NASA AUTHORIZATION OF APPROPRIATIONS FOR FISCAL YEAR 1976 AND TRANSITION PERIOD**

Olin E. Teague Washington GPO 4 Jun. 1974 12 p Conference report to accompany H.R. 4700, 94th Congr., 1st Sess., 4 Jun. 1975

(H-Rept-94-259) Avail: US Capitol, House Document Room

Appropriations for research and development, construction of facilities, and research and program management are discussed. Upper atmospheric research programs are defined along with a breakdown of the NASA fiscal year 1976 and transition period budget. M.J.S.

**N75-26493** Pennsylvania State Univ., University Park.

**FUEL USE IN THE US ELECTRICAL UTILITY INDUSTRY, 1971 - 1990 Ph.D. Thesis**

W. Noel Gillatt 1974 183 p

Avail: Univ. Microfilms Order No. 75-10810

Factors influencing the supply of and demand for electricity are discussed in terms of the decisions facing an individual electrical utility. A quantitative model is developed and utilized to simulate the decisions taken by an electrical utility to use primary fuels over time. Emphasis is given to environmental legislation and how it affects the different primary fuels in the electrical utility market. The model is premised on the assumption that the basic objective of the regulated utility is to minimize the present value of foreseeable costs while servicing the anticipated electrical load demanded. By varying the parameters representing fuel prices, technological factors, and public policy regression analysis is used to obtain response functions giving fuel use for the horizon years as a function of these parameters. Specific cases examined include coal-oil intercompetition for the year 1980 and coal-nuclear position in the 1990 electrical utility market.

Dissert. Abstr.

**N75-26511#** National Center for Energy Management and Power, Philadelphia, Pa.

**INVESTMENT POSSIBILITY OF FINANCIAL INSTITUTIONS IN SOLAR HEATING**

Paul D. Twombly Jun. 1974 81 p refs

(Grant NSF GI-29729)

(PB-239756/0; NCEMP-25; NSF/RA /N-74-152(1)) Avail: NTIS HC \$4.75 CSCL 13A

The influence that financial institutions may have in promoting the implementation of solar heating in commercial and residential buildings was investigated. Emphasis was placed on determining what additional financial commitments would be made by these institutions to owners and operators of buildings using solar heating. The inducements that governments could make for the financial institutions to increase these commitments were also considered. GRA

**N75-26516#** National Center for Energy Management and Power, Philadelphia, Pa.

**THE STUDY OF PRIORITIES IN THE ELECTRICAL ENERGY ALLOCATION PROBLEM**

T. L. Saaty, C. N. Weygandt, and R. S. Mariano Jun. 1974 61 p refs

(Grant NSF GI-29729)

(PB-239762/8; NCEMP-27) Avail: NTIS HC \$4.25 CSCL 10B

The problem of allocating electric energy for short periods during times of peak demand is treated. A methodology based on the assignment of priorities over classes of users of energy is applied. How these priorities are obtained and used to allocate electric power are illustrated. GRA

**N75-26525#** Mitre Corp., McLean, Va.

**AN ANALYSIS OF CONSTRAINTS ON INCREASED COAL PRODUCTION** Final Report

J. Bhutani, A. Brice, J. Elliott, D. Ellis, W. Jacobsen, J. Just, E. Krajewski, and J. Savadelis Jan. 1975 485 p refs  
(Contract DI-14-01-0001-1937)  
(PB-240613/0; MTR-6830) Avail: NTIS HC \$12.00 CSCL 081

Potential constraints on the nation's ability to significantly increase coal production are described. The analysis is based on the Project Independence Blueprint 'Business as Usual,' 'Intermediate,' and 'Accelerated' production scenarios through the year 1985. Appropriate action is recommended to eliminate or reduce the impact of the identified constraints. GRA

**N75-26545#** Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.

**EPA SYMPOSIUM: ALTERNATIVE CHEMICALS PROGRAM WITH AN OVERVIEW OF PESTICIDE RESEARCH AND DEVELOPMENT**

Aug. 1974 323 p Symp. held at Denver, 14-16 Aug. 1974 (PB-239416/1; EPA-540/9-75-002) Avail: NTIS CSCL 13B

Papers are presented which deal with such related areas as: purpose, organization, and operation of the substitute chemicals program; initial scientific, mini-economic, biosphere, and socioeconomic reviews; progress in EPA research - new directions; worldwide pesticide research and perspectives; U.S. participation in Codex; prerequisite conditions for determination and efficient realization of substitute chem. program in some European and developing countries; pesticide monitoring program; overview of ecological effects; terrestrial effects, marine life, and fresh water effects; systems analysis as a tool for research program design; intra- and extramural health effects research and long-range health effects. GRA

**N75-26657#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

**THE MATRIX ORGANIZATION IN ASD: A STUDY IN COLLOCATION OF ENGINEERS** M.S. Thesis

Cheryl L. Moyer Sep. 1974 269 p refs  
(AD-A003604: GSM/SM/74D-9) Avail: NTIS CSCL 05/9

The purpose of this study is to determine if there are peculiar human relations problems associated with the matrix form of organization as applied in the Aeronautical Systems Division (ASD) of the Air Force Systems Command. The data for this study was gathered by the interview questionnaire method. The questionnaire was designed to determine the work motive values, job satisfaction, and the current work conditions or climate as perceived by the engineers interviewed. The analyses consisted mainly of: (1) Contingency Table Tests, (2) Tabulations, and (3) Subjective Comparisons. The major variables selected for analysis were: (1) work assignment categories of (a) dedication, (b) collocation, and (c) functional (not collocated or dedicated); (2) work location categories of (a) ASD SPO, (b) Super SPO, and (c) Home Office; (3) civilian or military, and (4) age categories of (a) under 35, (b) 35 through 49, and (c) 50 and older. The major findings of the analyses were grouped into eight major categories and recommendations relevant to each category were made. GRA

**N75-26661#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio.

**A STUDY OF THE PERSONAL VALUE SYSTEMS AND JOB SATISFACTIONS OF UNITED STATES AIR FORCE OFFICERS** M.S. Thesis

John A. Madia Oct. 1974 105 p refs  
(AD-A003602: GSM/SM/74D-7) Avail: NTIS CSCL 05/10

The primary objectives of this research were to gain insights into the personal value systems and job satisfactions of Air Force officers. Prior to analyzing data, the paper discusses the role of values in human behavior and outlines the major job satisfaction theories currently in the literature. Using an adaptation of England's methodology, the primary orientations (POR) of 1321 officers, as well as the behavioral relevance of 77 personal values (PV)

concepts were determined. A modification of Hoppock's general job satisfaction blank was used to measure the satisfactions of the officers. Through tests of means and analysis of distributions, the satisfactions of the various officer subgroups were then compared. GRA

**N75-26665#** Minnesota Univ., Minneapolis.

**PERSONNEL TECHNIQUES NECESSARY TO MAXIMIZE BIO-BARRIER INTEGRITY AT A MARTIAN RECEIVING LABORATORY** Annual Report, 1 Jul. 1974 - 30 Jun. 1975 G. S. Michaelson and Thomas A. Mahoney 30 Jun. 1975 13 p refs  
(Grant NGL-24-005-160)

(NASA-CR-142963) Avail: NTIS HC \$3.25 CSCL 06B

The planning of biological isolation measures for the Mars Surface Sample Return Mission is discussed in terms of personnel and organizational management. Deficiencies in past operation of the Lunar Receiving Laboratory are analyzed. It was found that the failure to clearly define relationship among the government agencies involved and to effectively integrate their objectives and responsibilities was a major cause of Laboratory deficiencies. Possible solutions to these problems are presented for application to future missions. D.M.L.

**N75-26906#** Georgia Inst. of Tech., Atlanta. School of Industrial and Systems Engineering.

**AN EVALUATION OF POLICY-RELATED RESEARCH IN FIRE PROTECTION SERVICE MANAGEMENT** Final Report

David E. Fyffe and Ronald L. Rardin Oct. 1974 554 p refs  
(Grant NSF GI-39064)  
(PB-240655/1; NSF/RA/S-74-019) Avail: NTIS MF \$12.50 CSCL 13L

Evaluations of research in the field of urban fire service management are presented. In conducting the study, some 500 references related to fire service management were located and copies of approximately 350, including 65 which were classed as policy-related fire service management research, were obtained. The research reports were subjected to an evaluation by technical experts and comment by a panel of fire service professionals. Chapters of the report deal with broad, policy-related subject areas with sub-sections devoted to specific issues within the area. GRA

**N75-26909#** Naval Postgraduate School, Monterey, Calif.

**THE DEVELOPMENT OF AN INTERFUNCTIONAL NETWORK FOR THE IMPLEMENTATION OF THE DEPARTMENT OF DEFENSE LOGPLAN** M.S. Thesis

Dean Edward Dilger and Terry Alan Fulton Dec. 1974 81 p refs  
(AD-A003786) Avail: NTIS CSCL 15/5

The Department of Defense Logistics Systems Plan (LOGPLAN) is a document that constitutes the Department of Defense-wide, long-range plan for logistics systems improvement during the 1975-1980 time frame. The LOGPLAN contains a number of implementing actions for these logistics systems improvements which must be initiated during this time period. The purpose of this paper is to develop and evaluate a model which determines relationships among the one hundred fourteen implementing actions and arranges them into a logical progression for systematic implementation. This paper discusses LOGPLAN in general, the model developed, and an evaluation of the model. GRA

**N75-26910#** Texas A&M Univ., College Station. Inst. of Statistics.

**STATISTICAL CRITICAL PATH ANALYSIS IN ACYCLIC STOCHASTIC NETWORKS (STATISTICAL PERT)**

R. L. Sielken, Jr., L. J. Ringer, H. O. Hartley, and E. Arseven Nov. 1974 144 p refs  
(Contract N00014-68-A-0140; NR Proj. 047-700)

(AD-A003550; Themis-TR-48) Avail: NTIS CSCL 05/1

This paper describes and illustrates a comprehensive new procedure for obtaining information about the distribution of a project's completion time when the project is comprised of a large number of activities and the time required to complete an individual activity once it can be begun is a random variable. The project is represented as an acyclic network whose arcs correspond to the project activities. This network is simplified by replacing various activity configurations by single equivalent activities and then decomposed into several subnetworks. The distribution and moments of each subnetwork's completion time are bounded and approximated on the basis of two percentiles from each activity's completion time distribution by using some mathematical programming techniques and a new result in the theory of networks. The project's completion time distribution is then approximated by combining the approximate subnetwork distributions. The computer programs required to implement the general procedure are listed and documented. GRA

**N75-26911# Naval Postgraduate School, Monterey, Calif.**  
**ESCALATION PROVISIONS IN DOD PROCUREMENT: A REVIEW OF THE PROBLEM AND A FRAMEWORK FOR ANALYSIS M.S. Thesis**  
 Robert William Eberth Dec. 1974 41 p refs  
 (AD-A003541) Avail: NTIS CSCL 15/5

The study reviewed the opinions and concerns expressed by various government and private industry sources with regard to the use and structure of escalation (i.e., economic price adjustment) provisions in government procurement contracting. A framework was designed to facilitate the analysis of the relationship of escalation provisions and price level uncertainty. The specific model employed examined interacting objectives of the government and a firm in a sole-source contract negotiation scenario. A method was developed to approximate the increase in contract price required by the firm as compensation for accepting the risk of uncertain price levels. A criterion was established for the employment of the escalation provision in the modeled scenario. GRA

**N75-26914# Air Force Human Resources Lab., Brooks AFB, Tex.**  
**MODIFIED TOPCAP OBJECTIVE FORCE STRUCTURE MODEL Final Report**

James A. Hoskins Aug. 1974 16 p refs  
 (AF Proj. 2077)  
 (AD-A004780; AFHRL-TR-74-64) Avail: NTIS CSCL 05/9

Spiralling personnel costs, coupled with increased emphasis on management by objectives, has accentuated evaluation of personnel quality/quantity/cost tradeoffs pertinent to the development of a career force objective and enlisted force management system. A modification to one of the methodologies in the Total Objective Plan for Career Airman Personnel (TOPCAP) Computerized Management System, the Objective Force Structure Model, is proposed. The effort was prompted by a need for a method to evaluate tradeoffs between the quality of personnel entering the career force and the effects on the TOPCAP objective grade and force configuration. GRA

**N75-26919# Naval Postgraduate School, Monterey, Calif.**  
**TECHNOLOGY TRANSFER AND UTILIZATION METHODOLOGY FURTHER ANALYSIS OF THE LINKER CONCEPT**  
 J. A. Jolly and W. J. Creighton 30 Jun. 1974 53 p refs  
 (AD-A003867; NPS-55J074061) Avail: NTIS CSCL 05/2

The concept that a model of the methodology of technology transfer and utilization has two major subdivisions, formal vs informal communications, is discussed briefly. Some literature support for the informal communications aspect of the model of the methodology of technology transfer and utilization are presented. An in depth analysis is made of one of the informal elements of the model, linker-stabilizer behavior. The analysis is based on two studies of technically trained personnel: one, Naval Officers, and the Second, Government Service Employees. The thrust of the analysis and the conclusion seem to indicate strongly that the commonality of the technical training is more dominant than the decision to be a Naval Officer or a Government

Service Employee. This conclusion thus supports the belief that the distribution of linker-stabilizer behavior characteristics has a general base in terms of technically trained personnel and is not unique to a select population. GRA

**N75-26923# Naval Postgraduate School, Monterey, Calif.**  
**INFORMATION REQUIREMENTS OF A MANAGEMENT INFORMATION SYSTEM RELATING TO THE BUDGETARY DECISIONS OF A COAST GUARD PROGRAM MANAGER M.S. Thesis**

James Dale Burk and John Kennedy Miner Dec. 1974 100 p refs

(AD-A003858) Avail: NTIS CSCL 05/1

Information is the lifeblood of any organization. In an era where governmental budgeting is becoming more complex and more significant, operations without the aid of an effective management information system is difficult at best. Prior to the implementation of any management information system, a sound all-encompassing data base is essential. This thesis proposes information requirements to such a data base to be utilized by Coast Guard district level program managers when making budgetary decisions. GRA

**N75-26924# Sanders and Thomas, Inc., Pottstown, Pa.**  
**QUALITATIVE REQUIREMENTS INFORMATION ARMY POTENTIAL DEFENSE CONTRACTORS PROGRAM PROCEDURES FOR REGISTRATION Final Report, 1973 - 1974**

James G. Peirce, Herman B. Spiegel, and Norman B. Reed Dec. 1974 57 p refs  
 (Contract DAAA25-74-C-0697: DA Proj. 1P7-65801-MM-01)  
 (AD-A004032; FA-TR-74042) Avail: NTIS CSCL 15/5

This final report describes the Army operations which implement the overall DOD potential defense contractors program, which has been coordinated with the Air Force and the Navy. The Army has eliminated use of the DD Form 1630 for the PDC program, although it will remain viable in connection with bidders mailing lists. The replacement of the automated QRI RODATA information system by a less expensive system is also described. GRA

**N75-27565\*# Texas Univ., Austin. Center for Energy Studies.**

**TECHNOLOGY ASSESSMENT OF PORTABLE ENERGY RDT AND P**  
 John H. Vanston, Jr., W. Parker Frisbie, and Dudley L. Poston [1975] 303 p refs  
 (Contract NAS2-8444)  
 (NASA-CR-137655; Study-2B) Avail: NTIS HC \$9.25 CSCL 10B

Results are presented of a workshop conducted to assess portable energy technology. The results were evaluated and areas for future research were considered. Several research categories were studied: increasing presently available fuel supplies, developing new fuel sources, utilization of new transportation fuels, improving conservation practices, and equitable distribution of fuel supplies. Several research projects were proposed, and work statements were constructed for those considered suitable. Author

**N75-27602# Stanford Research Inst., Menlo Park, Calif.**  
**A MANAGEMENT ASSISTANCE STUDY FOR THE ENVIRONMENTAL PROTECTION BRANCH OF THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES Final Report**

David Ackerman, Don Jacobs, Cliff Steward, Ward Stoneman, and Leo Weisbecker Dec. 1974 106 p  
 (Contract EPA-68-01-1564)  
 (PB-241017/3; EPA-905/9-74-019) Avail: NTIS HC \$5.25 CSCL 13B

The Federal Government sponsored a study to assist the State of Michigan in a review of its newly established Environmental Protection Branch of the Department of Natural Resources; the impact of the new branch on interstate agencies and the

private sector; the impact of the new branch on intrastate agencies and the private sector; and the new branch's staffing requirements as these factors affect the State's environmental protection goals.

GRA

**N75-27751#** Control Data Corp., Arlington, Va. Engineering Management Operations.

**ASSESSMENT OF RURAL HEALTH RESEARCH: EXECUTIVE SUMMARY**

G. Singleton and S. Wyban Mar. 1975 54 p refs  
(Contract AG-12-01-01-5-510)  
(PB-240271/7; CDC/EMO-74/01) Avail: NTIS HC \$4.25 CSCL 06E

Problems and possible solutions in the area of rural health research and development are presented.

GRA

**N75-27800#** Aeronautical Research Labs, Melbourne (Australia). **MEASUREMENT REQUIREMENTS FOR THE MANAGEMENT OF A TIME-SHARING COMPUTER UTILITY**

R. C. Adams Mar. 1975 25 p refs  
(ARL/S-Rep-356) Avail: NTIS HC \$3.25

Special problems experienced with time-sharing utilities are analyzed in order to identify the data requirements for efficient management of an existing system. Some original measurement concepts are introduced, and ways and means of obtaining the data required are discussed. The presentation is in a machine independent form.

Author

**N75-27840#** Oklahoma State Univ., Stillwater. **STATISTICAL CONCEPTS FOR DESIGN ENGINEERS Final Report**

J. R. Murphy and L. D. Broemeling Sep. 1974 152 p refs  
(Grant EPA-R-802269)  
(PB-239721/4; EPA-650/2-74-080) Avail: NTIS HC \$6.25 CSCL 12A

The report describes basic statistical concepts for engineers engaged in test design. Although written in handbook form for use within the Environmental Protection Agency, it is not intended to replace existing statistics textbooks. Its objectives are: to enable design engineers to converse with consulting statisticians, to introduce basic ideas for further individual study, and to enable the reader to make some immediate applications to his own work.

GRA

**N75-27948** Arizona State Univ., Tempe. **A DECISION THEORY APPROACH TO PERSONNEL MANAGEMENT Ph.D. Thesis**

John Butler Tillman 1975 287 p  
Avail: Univ. Microfilms Order No. 75-15955

The application of decision theory models to personnel management decision situations is investigated. It includes a taxonomy of personnel management decision situations. It identifies and describes decision theory models which might be applied to personnel management decision situations. A systematic method of analysis which can be used as a guide by the personnel manager in the application of decision theory methods to practical personnel management problems is developed. The personnel management decision algebra is introduced as an aid to the decision-maker in the prediction and evaluation of outcomes which arise in his analysis of personnel management problems. Application of the personnel management decision algebra is an integral part of the method of analysis. Finally, the systematic method of analysis is applied to several personnel management decision situations. It is found that the method of analysis provides an effective guide to the logical analysis of these personnel management decision problems. Dissert. Abstr.

**N75-27949\*** Scientific Translation Service, Santa Barbara, Calif. **ORGANIZING CENTRALIZED AIRCRAFT COMPONENT OVERHAUL**

S. N. Malkov Washington NASA Jul. 1975 235 p refs

Transl. into ENGLISH from the book "Organizatsiya Tsentralizovannogo Remonta Agregatov Samoletov" Moscow, Transport Press, 1974 p 1-180

(Contract NASW-2483)

(NASA-TT-F-16266) Avail: NTIS HC \$7.50 CSCL 05A

Preparation of a stable production base and rational organization of centralized component overhaul processes are examined. Methods are presented for determining overhaul requirements, optimizing centralized production objects and locations, planning the production program, introducing standardized technology, and fully mechanized flow lines for group overhaul of aircraft components.

Author

**N75-27950#** Office of the Director of Defense Research and Engineering, Washington, D.C.

**THE INDEPENDENT RESEARCH AND DEVELOPMENT PROGRAM. A REVIEW OF IR AND D**

Jun. 1974 44 p

(AD-A004610) Avail: NTIS CSCL 15/3

Contents: What is IR and D; What are the objectives; What are the benefits; How are the mechanisms for IR and D cost recovery applied; How is IR and D managed by contractors; What are the important aspects of governmental controls over IR and D; What are the key criticisms of DoDs IR and D program and how valid are they; Appendix - results of industrial survey.

GRA

**N75-27951#** Air Force Systems Command, Wright-Patterson AFB, Ohio. Foreign Technology Div.

**SCIENCE MANAGEMENT**

G. M. Dobrov 26 Nov. 1974 396 p refs Transl. into ENGLISH of the book "Upravleniya Naukoyu" USSR, 1971 p 1-28  
(AD-A004346; FTD-HC-23-896-74) Avail: NTIS CSCL 05/1

The book presents a general survey of science management both in the U.S.S.R. and abroad. The problems of scientific research management within the limits of a research team laboratory, institute department, and the national economy as a whole are considered. Existing management methods, the level of organization and cooperation in scientific work, and the adoption of methods of operations research in proposing research plans of the research institutes are analyzed. Problems of providing science management with prognosis and publishing activity control, systems of indices of scientific results and also the basic principles of regional policy in science are presented.

GRA

**N75-27965#** Ohio Dept. of Economic and Community Development, Columbus.

**THE STATE DEVELOPMENT FOUNDATION: MEETING SOCIETAL NEEDS THROUGH CENTERS OF INNOVATION. VOLUME 1: PROJECT REPORT Final Report, 15 May 1972 - 15 Sep. 1974**

D. D. Colosimo, Marcia Wilkof, and Jules J. Duga Mar. 1974 46 p refs

(Grant NSF GT-34578)

(PB-240792/2; NSF/RA/G-74-020A) Avail: NTIS HC \$3.75; HC also available from NTIS HC \$9.00/set of 2 reports as PB-240791-SET CSCL 05C

Some approaches were tried, based on the observation of a direct relationship between scientific research and economic development. State science foundations were created and funded to support projects to enhance the state's scientific research capabilities which would attract Federal R and D funds and associated high technology industries. The success rate of these foundations was mixed, but successful science foundations have attracted at least four new development dollars for each foundation dollar. This report examines and assesses the experiences of nine state science foundations and twelve private centers of innovation. Guidelines are suggested for a state development foundation.

GRA

**N75-27966#** Ohio Dept. of Economic and Community Development, Columbus.

**THE STATE DEVELOPMENT FOUNDATION: MEETING SOCIETAL NEEDS THROUGH CENTERS OF INNOVATION.**

**VOLUME 2: APPENDICES Final Report, 15 May 1972 - 16 Sep. 1974**  
 D. D. Colosimo, Marcia Milkof, and Jules J. Duga Mar. 1974  
 152 p refs.  
 (Grant NSF GT-34578)  
 (PB-240793/0; NSF/RA/G-74-020B) Avail: NTIS HC \$6.25;  
 HC also available from NTIS HC \$9.00/set of 2 reports as  
 PB-240791-SET CSCL 05C

A comparative analysis of state technical development activities was conducted in order to provide a basis for improved economic development programs in Ohio and other states. This analysis of nine state foundations and twelve private centers of innovation is based on information derived from annual reports, published papers, personal and telephone interviews, and unpublished reports and correspondence. GRA

**N75-27972# RAND Corp., Santa Monica, Calif.**  
**THE STRUCTURE OF SOVIET OUTLAYS ON R AND D IN 1960 AND 1968**  
 Nancy Nimitz Jun. 1974 133 p refs  
 (Contract DAHC15-72-C-0083)  
 (AD-A004598; R-1207-DDRE) Avail: NTIS CSCL 05/3

Whether the share of defense/space in total ruble outlays is taken to be three-quarters, as estimated elsewhere, or one-half, as this report estimates, does not alter R and "D" results but does change implied relative productivities in military and civilian R and D. Differences in sectoral productivity are explained largely by differences in the characteristics of the buyers of new civilian and military capital goods in the USSR. Unlike the civilian customer, the military customer has both market power and an evident preference for technical approaches that save time and restrain costs. The method of estimation links ruble outlays to R and D employment. Total employment and outlays are distributed among 28 branches of the economy (10 nonindustrial and 18 industrial); the contribution of each branch to defense/space is then estimated as a range (defined at the lower end by the percentage share of defense/space in R and D outlays in the analogous U.S. branch in the same year.) GRA

**N75-28528# Mitre Corp., McLean, Va.**  
**TRANSPORTATION ENERGY CONSERVATION: A PROGRAM PLAN OF POLICY-ORIENTED RESEARCH Final Report**  
 Willard E. Fraize, Michael Lenard, and John Lieb Jan. 1975  
 77 p refs  
 (Contract FEA-C-04-50065-00)  
 (PB-240734/4; MTR-6843) Avail: NTIS HC \$4.75 CSCL 10A

Transportation's role in energy conservation is reviewed. The Office of Transportation Research proposed research program to explore transportation energy use and alternative government policies related to transportation energy conservation is described. Project descriptions include estimated cost, suggested scheduling, priority designation, interrelationships with other projects and programs, and detailed task descriptions. GRA

**N75-28530# Industrial Research Inst., Inc., New York.**  
**INSTITUTIONAL AND LEGAL CONSTRAINTS TO COOPERATIVE ENERGY RESEARCH AND DEVELOPMENT Final Report**  
 Mar. 1975 174 p  
 (Contract DOC-4-35596)  
 (PB-240929/0; CTAB-75-2) Avail: NTIS HC \$6.25 CSCL 10A

Guidelines are provided for the design and operation of research and development consortia with a minimum risk of antitrust challenge. A platform is given for a government-industry dialog on the need for and the barriers to cooperative research and development. The results of a survey of Industrial Research Institute member companies which identifies industry's perceptions of the barriers to cooperative research and development ventures and describes eight illustrative case histories is presented. GRA

**N75-28809# Ballistic Research Labs., Aberdeen Proving Ground, Md.**

**WASTING TIME MODELING, EH**  
 F. E. Grubbs Jan. 1975 21 p ref  
 (DA Proj. 1T1-61102-A-14B)  
 (AD-A005177; BRL-MR-2436) Avail: NTIS CSCL 12/2

The author records herein a discussion of the need for and uses of modeling in Army Research and Development work and to some extent generally in science and technology. The author brings to the forefront some continuing problems in the management of models with the hopes that rotated managers on one hand and modelers on the other might communicate better for the good of both. The aim in addition is to provide some preliminary material for appropriate, continuing discussion and especially for faster progress on the general subject. GRA

**N75-28862# Comptroller General of the United States, Washington, D.C.**  
**THE LIQUID METAL FAST BREEDER REACTOR: PROMISES AND UNCERTAINTIES**  
 [1975] 155 p refs  
 (OSP-76-1) Avail: NTIS HC \$6.25

The Federal Government's role in the development of the liquid metal fast breeder reactor for use in electrical power generating plants is investigated. The managerial and technical aspects of the LMFR program are considered along with its economic, environmental, and social implications. Conclusions and recommendations are given. Author

**N75-28947# Office of Naval Research, Arlington, Va.**  
**MANAGEMENT STUDIES AND THEIR IMPACT ON NAVAL RESEARCH**  
 Robert J. Mindak 1 Nov. 1974 197 p refs  
 (AD-A005420; ONR-ACR-205) Avail: NTIS CSCL 05/2

A brief review of 18 management studies on naval research and development in science, along with the Government Procurement Report of 1972 is presented. Conclusions and recommendations are summarized. J.R.T.

**N75-28954# Committee on Labor and Public Welfare (U. S. Senate).**  
**FEDERAL MANAGEMENT OF SCIENTIFIC AND TECHNICAL INFORMATION (STINFO) ACTIVITIES: THE ROLE OF THE NATIONAL SCIENCE FOUNDATION**  
 Robert L. Chartrand and Rosemary A. Chalk Washington GPO Jul. 1975 123 p refs Rept. prepared for Special Subcomm. on the Nat'l. Sci. Foundation of Comm. on Labor and Public Welfare, 94th Congr., 1st Sess., Jul. 1975 Prepared by the Library of Congr., Sci. Policy Res. Div.

(GPO-54-874) Avail: Comm. on Labor and Public Welfare The role of the Federal Government, and in particular the National Science Foundation, in managing and monitoring scientific and technical information (STINFO) activities in both the public and private sectors is examined. An overview of the conceptual and factual information essential to an understanding of STINFO activities is given, including a review of salient developments during the preceding two decades. A retrospective look at the full range of studies, policy-level decisions, and organizational actions affecting the evolution of the STINFO community in the period 1950-1975 is presented. The role of Congress in this area is discussed. Author

**N75-28969# National Bureau of Standards, Washington, D.C.**  
 Technical Analysis Div.

**POINT-TO-POINT TRIP MANAGEMENT PROGRAM (PRELIMINARY ANALYSIS) Final Report**  
 William G. Kienstra and Daniel J. Minnick 7 Feb. 1975 27 p refs Sponsored in part by DOT  
 (COM-75-10421/6; NBSIR-75-665) Avail: NTIS HC \$3.75 CSCL 13B

The preliminary analysis of Point-To-Point Trip Management (PTPTM) is concerned with providing prospective riders of mass

transit with the necessary detailed information for particular trips. This report contains the results of a literature search on automation in the telephone information center, and analyzes the data collected from 29 existing centers. Additionally, on-site visits were made to three operational centers, and tapes of actual telephone inquiries and responses were obtained and analyzed. The use of microfiche and computers are examined as an aid to the operators in these centers. Total automation of these centers is also discussed.

GRA

**N75-29021\*** Cessna Aircraft Co., Wichita, Kans.

**GENERAL AVIATION'S FUTURE NEED FOR RESEARCH**  
Malcolm Harned /n NASA. Langley Res. Center NASA/Univ. Conf. on Aeron. 1975 p 379-380

**CSCL 01B**

The research requirements for general aviation aircraft are presented. Emphasis is placed on improving the performance of airfoils, propellers, and engines. Additional requirements are expressed with respect to external noise reduction, internal noise reduction, and exhaust emission control. The requirement for anti-icing developments to create improved flight safety is discussed.

Author

**N75-29022\*** Stanford Univ., Calif.

**UNIVERSITY RESEARCH IN AERONAUTICS**

Holt Ashley /n NASA. Langley Res. Center NASA/Univ. Conf. on Aeron. 1975 p 381-383

**CSCL 01B**

The types of aeronautical research projects which universities should and should not accept for Government and industry are discussed. Specific examples of suitable and unsuitable research projects are presented. The author recommends two modes by which universities can be of assistance to other organizations in aeronautical research.

Author

**N75-29070#** Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Oberpfaffenhofen (West Germany). Zentralabteilung Luftfahrttechnik.

**FLIGHT SAFETY WORK OF THE GERMAN AVIATION AND SPACE RESEARCH INSTITUTE**

Ferdinand Schatt 14 Jan. 1975 44 p refs In GERMAN; ENGLISH summary Presented at the 26th Intern. Air Safety Seminar of the Flight Safety Found., Lisbon, 4-7 Nov. 1973 (DLR-Mitt-75-05) Avail: NTIS HC \$3.75; DFVLR, Porz, West Ger. 19.20 DM

Tasks and organization of the establishment and its aeronautical research institutes are surveyed. Research topics in the field of flight safety are detailed for some institutes, and examples selected are based on usefulness for practical situations or aircraft operations.

ESRO

**N75-29086#** Transportation Systems Center, Cambridge, Mass.  
**ADVANCED AIR TRAFFIC MANAGEMENT SYSTEM STUDY: TECHNICAL SUMMARY** Final Report, 1 Jul. 1973 - 30 Jun. 1974

30 Jun. 1974 213 p refs  
(PB-241223/7; DOT-TSC-OST-75-6) Avail: NTIS HC \$7.25 CSCL 17G

Study and development plans are summarized for the air traffic management system of the late 1980's and beyond. The plans are presented in the framework of an evolutionary system concept of traffic management, building upon the upgraded third generation air traffic control system, and defined to meet the projected demands for service, safety, and flexibility in a cost effective manner. In order to provide the information needed for planning future system developments, a program of research and development is described for the system concept presented.

GRA

**N75-29154+** Mitre Corp., McLean, Va.

**AERONAUTICAL SATELLITE (AEROSAT) PROGRAM RELATED BIBLIOGRAPHY** Final Report  
Y. Kaminsky Nov. 1974 77 p refs  
(AD-A005987; MTR-6609; FAA-EM-74-16) Avail: NTIS HC \$4.75 CSCL 22/1

A bibliography of documents having a direct or indirect bearing on the various aspects of the Aeronautical Satellite (AEROSAT) Program is presented. The documents are the references on file in the MITRE AEROSAT/QSATS Group and do not represent an exhaustive listing of documents of other MITRE groups, government agencies, industrial companies, or library listings. The bibliography is divided into five sections: reports, memoranda, briefings, technical articles, and conference papers. There are 650 references.

Author

**N75-29461#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**COMPUTER ASSISTED INSTRUCTIONS IN SYSTEM RELIABILITY FOR LOGISTICS MANAGERS**

Walter H. Elbinger and John Keskula Jan. 1975 225 p refs (AD-A006340; SLSR-12-75A) Avail: NTIS CSCL 14/4

This thesis provides the logistics manager with computer aided instructions in solving reliability problems. The report presents five computer programs for solving the reliability problem.

GRA

**N75-29729** Defense Dept., Washington, D.C. Office of the Assistant Secretary of Defense for Health and Environment.

**A STUDY ON MEDICAL OFFICER CAREER MANAGEMENT AND RETENTION IN THE USA ARMED FORCES**

John E. Murphy /n AGARD Current Status in Aerospace Med. May 1975 13 p refs

Factors which influence career management and retention of medical officers in the Armed Forces are identified. Various mathematical techniques were used to identify the individual goals of medical officers and the relationship of these goals to selected aspects of a military career. Results include information on the perceptions and expectations of young medical officers toward a career in the Armed Forces. Specific potential policy changes are evaluated in terms of improved career management and increased retention of medical officer.

Author

**N75-29810#** New Mexico State Univ., University Park. Engineering Experiment Station.

**CONTROL TECHNIQUES FOR PRODUCTION PROCESSES USING BAYESIAN ESTIMATION AND EXPONENTIAL SMOOTHING** Final Report

Satish J. Kamat Mar. 1975 182 p refs  
(Grant NSF ENG-73-08107)  
(PB-241142/9; NMSU-EES-244-72) Avail: NTIS HC \$7.00 CSCL 13H

Control procedures were developed for production processes where the quality characteristic can be described by a continuous random variable with control specifications of mean, variance, and fraction defective. Under the mean specification a linear shift and a step shift model were used separately. Monte Carlo simulation was performed for both these procedures under mean specification and compared against the corresponding x-bar charts and cumulative sum charts using total cost as the criterion. Based on the analysis of variance and a five percent significance level, the procedures developed were better than the existing charts for ratios of the unit cost of a corrective action to the unit cost of a defective unit that can be expected in practice.

GRA

**N75-29936** British Library Lending Div., Boston Spa (England).  
**COST ACCOUNTING AT LARGE RESEARCH CENTERS**  
J. Schulte-Hillen 4 Feb. 1975 55 p refs Transl. into ENGLISH  
from the German report DLR-FB-73-64  
(BLL-RAE-Trans-5207-(1765); DLR-FB-73-64) Copyright. Avail:  
British Library Lending Div., Boston Spa, Engl.: 16 BLL photocopy  
coupons

A survey of cost accounting at German large-scale research centers is given, based on a questionnaire: an investigation into the legal aspects of designing a system of cost accounting in major research is discussed. The objectives are presented of a cost accounting system specially geared to the responsibilities of major research. The question is discussed as to how far the findings of economic science, as developed for the commercial production of goods, can be transferred to the 'production of information', and what methods of cost accounting are suitable for application to major research. A system of cost accounting based on the principle of direct costing was developed, which is adapted to a system of standard cost accounting. The proposed method consists of cost, category, cost center and cost unit accounting, each of which expanded only to an extent necessary for research; particular attention is paid to avoiding any exaggerated coding system for the appointment of costs.

Author

**N75-29938#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**AN ANALYSIS OF THE EFFECTIVENESS OF ASPR IN PROVING GUIDANCE FOR THE UTILIZATION OF GOVERNMENT-OWNED INDUSTRIAL PLANT EQUIPMENT M.S. Thesis**

Joseph A. Insley and Ronald T. McBride Jan. 1975 83 p refs

(AD-A006351; SLSR-24-75A) Avail: NTIS CSCL 15/5

The control of Industrial Plant Equipment (IPE) is an integral part of Government Property Administration. The Department of Defense tends to weaken efficient management of Government-owned IPE in the possession of its contractors by failing to establish stricter standards for IPE utilization. Although Appendix B of the Armed Services Procurement Regulation (ASPR) contains guidance for the development of utilization procedures, it tends to be somewhat vague and subject to interpretation by both Government Property Administrators and contractors alike. The authors analyzed twenty-five approved utilization procedures and evaluated the content of these procedures against the requirements of ASPR Appendix B-603.1. They concluded that the present ASPR requirements are inadequate to provide the management control necessary to insure that IPE in the possession of contractors is properly utilized or declared excess when no longer required in support of a contract. They also contend that some utilization procedures in being do not meet the minimum requirements of ASPR.

GRA

**N75-29939#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**AN INVESTIGATION OF A PROPOSED AUCTION TECHNIQUE AS A METHOD OF PROCUREMENT M.S. Thesis**  
Willie J. Freeman, Jr. and Robert G. Welbaum Jan. 1975

152 p refs

(AD-A006350; SLSR-21-75A) Avail: NTIS CSCL 15/5

The Department of Defense procurement system has not always been effective in establishing a reasonable price. This thesis purpose was to investigate an Auction Technique as an alternative procurement method. Formal Advertising was used for comparison purposes. Four tests were made: (1) determine the reliability of both procurement methods by comparing the results of a hypothetical procurement to a predictive model, (2) determine which procurement method would result in the lowest price, (3) investigate how bids would change when the expectation of future business changed, and (4) determine the difference between the lowest bid and the second lowest bid for each procurement method.

GRA

**N75-29940#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**AN EVALUATION OF THE MAJOR QUALIFICATIONS DESIRED OF AIR FORCE SYSTEM PROGRAM MANAGERS M.S. Thesis**  
Ralph E. Smythe and William J. McMullan Jan. 1975 104 p refs

(AD-A006360; SLSR-31-75A) Avail: NTIS CSCL 05/9

The study conducted an exploratory evaluation on the education, experience, and managerial trait qualifications desired of system program managers over the program life cycle. Interviews were conducted with the present system program managers of major Air Force programs to obtain data bearing on the relationship of the desired qualifications between the individual stages.

GRA

**N75-30659#** Energy and Environmental Analysis, Inc., Arlington, Va.

**PROJECTED REGIONAL ENERGY AVAILABILITY IN 1985 Final Report, 1 Jul. 1974 - 15 Jan. 1975**  
15 Jan. 1975 100 p  
(Contract DAAK02-75-C-0080; DA Proj. 4A7-62719-A-886)  
(AD-A008938) Avail: NTIS CSCL 10/1

Fixed Army facility energy requirements, in the context of national and regional energy trends through 1985, are evaluated. The national energy outlook in terms of the availability and price of various sources of energy is discussed. Demand and price forecasts are made for each energy source for each of nine census regions. Fixed Army Facility energy demands are forecasted within the nine regions by type of energy required.

GRA

**N75-30792#** Office of Civilian Manpower Management, Arlington, Va.

**AN INTEGRATED WORKLOAD AND MANPOWER PLANNING SYSTEM FOR THE NAVAL AIR REWORK FACILITY, NORTH ISLAND Research Report**  
E. S. Bres and R. J. Niehaus Nov. 1974 46 p refs Sponsored by the Navy  
(RF55521101)

(AD-A006293; OCMM-RR-21) Avail: NTIS CSCL 05/9

The paper describes the application of a manpower management model to a large industrial facility within the Naval Shore Establishment, the Naval Air Rework Facility, North Island, San Diego, California. This test involved the use in the model of manpower requirements data developed from the NARF workload planning system. The various input collection procedures are described and the outputs are analyzed in terms of management decisions.

GRA

**N75-30917\*** National Aeronautics and Space Administration, John F. Kennedy Space Center, Cocoa Beach, Fla.

**AN OPTIMUM ORGANIZATIONAL STRUCTURE FOR A LARGE EARTH-ORBITING MULTIDISCIPLINARY SPACE BASE Ph.D. Thesis - Fla. State Univ., 1973**

James M. Ragusa Washington Jun. 1975 304 p refs  
(NASA-TM-X-3233) Avail: NTIS HC \$9.25 CSCL 05A

An optimum hypothetical organizational structure was studied for a large earth-orbiting, multidisciplinary research and applications space base manned by a crew of technologists. Because such a facility does not presently exist, in situ empirical testing was not possible. Study activity was, therefore, concerned with the identification of a desired organizational structural model rather than with the empirical testing of the model. The essential finding of this research was that a four-level project type total matrix model will optimize the efficiency and effectiveness of space base technologists.

Author

**N75-30922#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**NETWORK MANAGED AIR FORCE PROJECTS: THE ACCURACY OF ESTIMATES AS A FUNCTION OF TIME M.S. Thesis**

James H. Lowry, Martin F. Nahlen, and William M. Peter Jan. 1975 144 p refs

(AD-A006326; SLSR-1-75A) Avail: NTIS CSCL 05/1

Recent congressional criticism has emphasized the need for accurate predictions of cost and schedule requirements for developing Air Force weapon systems. Meanwhile, network analysis has been credited with allowing the development of complex weapon systems in the minimum time and at the minimum cost. The study is focused on the relationships between the accuracy of activity-time estimates and three factors--the estimate's distance from the activity start date, activity duration, and the estimate's distance from the project start date. Multiple regression was used to estimate the relationships among the variables. Methods of improving estimating accuracy in network-managed projects are recommended. GRA

**N75-30923#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**CRITERIA FOR EVALUATING CONTRACTOR MANAGEMENT POTENTIAL DURING THE SOURCE SELECTION PROCESS FOR THE ACQUISITION OF MAJOR WEAPON SYSTEMS M.S. Thesis**

Timothy P. Cormany and John P. Donnellan Jan. 1975 111 p refs

(AD-A006329; SLSR-2-75A) Avail: NTIS CSCL 05/1

The purpose of the study was to analyze the proposition that a relationship exists between the managerial capabilities of the civilian contractor and the success of the contract. The proposition was developed which considered that a relationship exists between project success and the project management teams. Non-parametric statistics were used to test the hypotheses utilizing the management data gathered, and subjective analysis was applied to determine each contract's degree of success.

GRA

**N75-30924#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. Schpol of Systems and Logistics.

**AN INVESTIGATION OF NEGATIVE PRE-AWARD SURVEYS AS AN INDICATOR OF A CONTRACTOR'S INABILITY TO MEET A DELIVERY SCHEDULE M.S. Thesis**

Jack A. Barnaby and Kenneth J. Bohannon Jan. 1975 102 p refs

(AD-A006330; SLSR-3-75A) Avail: NTIS CSCL 05/1

The Defense Contract Administration Services (DCAS) has established procedures for evaluating potential contractor capability; this evaluation is called the Pre-Award Survey. One of the primary concerns of the survey involves the ability of the contractor to deliver a quality product within the established parameters of the delivery schedule. The purpose of the study was to investigate whether the pre-award survey is an effective indicator of contractor performance. The study explored the delinquency rates of contracts which had both negative and positive pre-award survey recommendations. GRA

**N75-30926#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**THE ACCURACY OF INITIAL ESTIMATING EFFORTS IN NETWORK MANAGED AIR FORCE PROJECTS M.S. Thesis**

Paul E. Tyler and John F. West, III Jan. 1975 89 p refs

(AD-A006333; SLSR-4-75A) Avail: NTIS CSCL 05/1

Project managers often use network methods to divide a project into basic activities, estimate the time required for each activity, and then construct a network to show the interrelated sequencing of the activities. The initial estimated activity times provided the basis for financial planning, resource requirements determinations, and the scheduling of resources. The accuracy of the initial estimates is critical to achieving targeted project objectives since these estimates frequently determine resources authorized and committed to the project. Because of the

importance of the initial estimates, further research was required to determine how accurate the initial estimates are. This research effort demonstrated that there is a difference between the initial estimates and the actual activity time in Air Force network-managed projects which resulted in optimistic estimates. GRA

**N75-30927#** Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

**THE AUTHORITY RELATIONSHIPS OF CONTRACTING OFFICERS IN A PROJECT/PROGRAM MANAGEMENT ENVIRONMENT M.S. Thesis**

John R. Block and Gordon E. Hadlow Jan. 1975 100 p refs

(AD-A006338; SLSR-10-75A) Avail: NTIS CSCL 05/1

The objective was to explore the authority relationship of the Air Force procurement contracting officer in the setting of a program management environment. The contracting officer's position was measured as a contrast between his relationship with the program manager and his relationship with the Directorate of Procurement and Production. These relationships of the contracting officer were explored in the program management environments in the system program offices (SPO) of the Aeronautical Systems Division at Wright-Patterson AFB, Ohio. The thesis includes a discussion of the interrelationships of authority, power, and influence. GRA

**N75-30928#** Naval Postgraduate School, Monterey, Calif.

**MANPOWER PLANNING MODELS. 1: BASIC CONCEPTS**

R. C. Grinold and K. T. Marshall Dec. 1974 29 p refs

(AD-A005871; NPS-55MT74122) Avail: NTIS CSCL 05/9

The report is the first in a series which present methods used in analyzing manpower planning problems. The concepts of stocks, flows, manpower classification and timing convention are introduced, together with basic flow conservation concepts and equilibrium analysis. GRA

**N75-30930#** Army Materiel Command, Texarkana, Tex. Intern Training Center.

**MANAGING COST OVERRUN ENGINEERING CHANGE PROPOSALS Final Report**

William F. Mariutto Apr. 1975 39 p refs

(AD-A009183; USAMC-ITC-02-08-74-211) Avail: NTIS CSCL 05/1

This research report examines data collected representing cost estimates for engineering changes and the actual cost of the change. It gives a picture of the outcome of the present method of approval authority at the United States Army Electronics Command. The history of past cost estimates is reviewed and by use of regression analysis an attempt is made to control possible cost overruns in the future. This data revealed a serious deficiency in certain areas and a recommendation is made to revise the present method to try to reduce the serious cost overruns that occurred. GRA

**N75-31131** Eurospace, Paris (France).

**THE EUROPEAN SPACE INDUSTRY IS READY TO DELIVER OPERATIONAL SYSTEMS [L'INDUSTRIE SPATIALE EUROPEENNE EST PRETE A FOURNIR DES SYSTEMES OPERATIONNELS]**

Yves Demerliac /n ESRO European Capabilities for Space Appl. 1975 11 p. In FRENCH

The role of EUROSPACE, the Association of Aerospace Industries in Western Europe, in European space industry is discussed: (1) mediation between the European Space Agency and industry and (2) studying the economic viability of space projects. The credibility of the European space industry is illustrated by mentioning a range of satellites, launchers, or ground stations which are completely European or in which European industry participated, such as Diamant, Black Arrow, San Marco, Kourou, APT, Skynet, Symphonie, and Spacelab. Advantages associated with the delivery of European space systems are discussed, including delivery of material, operational and management of systems, client assistance in planning, and financial facilities.

ESRO

**N75-31139** Hawker Siddeley Dynamics Ltd., Stevenage (England).  
**THE INDUSTRIAL DEVELOPMENT OF OTS AND MAROTS**  
 P. L. V. Hickman and J. E. Humby /n ESRO European Capabilities for Space Appl. 1975 54 p refs

The way in which the MESH consortium is organized to discharge its responsibilities to ESRO for the Orbital Test Satellite (OTS) and MAROTS projects is described. OTS will handle all types of communication traffic within Europe while MAROTS is derived from OTS and will provide reliable ship-to-shore communications over one third of the globe. It is shown that the basic OTS spacecraft can be used to satisfy the communication requirement of other regions throughout the world.

Author (ESRO)

**N75-31547\*** General Electric Co., Philadelphia, Pa. Space Div.

**TERSSE: DEFINITION OF THE TOTAL EARTH RESOURCES SYSTEM FOR THE SHUTTLE ERA. VOLUME 4: THE ROLE OF THE SHUTTLE IN THE EARTH RESOURCES PROGRAM**

Nov. 1974 134 p  
 (Contract NAS9-13401)

(NASA-CR-141770) Avail: NTIS HC \$5.75 CSCL 05B

The potential of the space shuttle as a platform for captive earth resources payloads in the sortie mode, and as a launch and services vehicle for automated earth resources spacecraft is examined. The capabilities of the total space transportation system which are pertinent to earth resources sorties and automated spacecraft are included.

J.M.S.

**N75-31919\*** Toledo Univ., Ohio.

**THE TOTAL ASSESSMENT PROFILE, VOLUME 1**

G. Leininger, S. Jutila, J. King, W. Muraco, J. Hansell, J. Lindeen, E. Franckowiak, and A. Flaschner Aug. 1975 427 p  
 (Contract NAS3-17826)

(NASA-CR-134863-Vol-1) Avail: NTIS HC \$11.25 CSCL 05K

A methodology is described for the evaluation of societal impacts associated with the implementation of a new technology. Theoretical foundations for the methodology, called the total assessment profile, are established from both the economic and social science perspectives. The procedure provides for accountability of nonquantifiable factors and measures through the use of a comparative value matrix by assessing the impacts of the technology on the value system of the society.

Author

**N75-31922** California Univ., Los Angeles.

**THE PRAXEOLOGY OF DESIGN, MANAGEMENT, AND POLICY MAKING Ph.D. Thesis**

Malcolm George Wolfe 1975 218 p

Avail: Univ. Microfilms Order No. 75-16801

A systems planning and design is presented which utilizes a systems approach and includes a decision making vector which consists of three entities: (1) the policy maker, (2) the project manager, and (3) the designer. Often the solution to a problem is designed to attack the symptoms rather than the cause of the problem and sometimes results in a problem more severe than the original problem. It is suggested that this phenomenon is due to an individual's problem solving style of each of the elements in the decision making vector and the relative positions they hold in a power hierarchy. The roles and activities of the three entities were probed in depth to determine how the decision making system functions and to isolate those factors which lead to irrational decisions and, hence, to poorly designed systems. A systemized approach to the planning of a space transportation system is presented. A computer simulation program was used as a tool in the planning and design effort.

Dissert. Abstr.

**N75-31924\*** Lockheed Electronics Co., Houston, Tex. Aerospace Systems Div.  
**DETAILED REQUIREMENTS DOCUMENT FOR THE INTER-**

**ACTIVE FINANCIAL MANAGEMENT SYSTEM (IFMS), VOLUME 1**  
 D. B. Dodson Jul. 1975 674 p refs  
 (Contract NAS9-12200)  
 (NASA-CR-144423; LEC-1625-Vol-1) Avail: NTIS HC \$15.25 CSCL 05A

The detailed requirements for phase 1 (online fund control, subauthorization accounting, and accounts receivable functional capabilities) of the Interactive Financial Management System (IFMS) are described. This includes information on the following: systems requirements, performance requirements, test requirements, and production implementation. Most of the work is centered on systems requirements, and includes discussions on the following processes: resources authority, allotment, primary work authorization, reimbursable order acceptance, purchase request, obligation, cost accrual, cost distribution, disbursement, subauthorization performance, travel, accounts receivable, payroll, property, edit table maintenance, end-of-year, backup input. Other subjects covered include: external systems interfaces, general inquiries, general report requirements, communication requirements, and miscellaneous. Subjects covered under performance requirements include: response time, processing volumes, system reliability, and accuracy. Under test requirements come test data sources, general test approach, and acceptance criteria. Under production implementation come data base establishment, operational stages, and operational requirements.

Y.J.A.

**N75-31926\*** New Mexico State Univ., Las Cruces.

**SUPERVISORS MINI-LIBRARY SERIES. NUMBER 1: JOB PLANNING, BUDGETING TIME AND EFFORT**

Feb. 1975 110 p  
 (PB-241902/6; USCSC-74-NM-01) Avail: NTIS HC \$5.25 CSCL 05I

Topics regarding the supervisory position are discussed including why planning and budgeting of time and effort are important to a supervisor, basic factors in job planning applicable to supervisory positions, and ways to work with maximum efficiency.

GRA

**N75-31930\*** Army Materiel Command, Texarkana, Tex. Intern Training Center.

**NUMERICAL METHODS FOR THE EVALUATION OF POTENTIAL RESEARCH AND DEVELOPMENT CONTRACTORS Final Report**

Steven W. Peterson Apr. 1975 56 p refs  
 (AD-A009415; USAMC-ITC-02-08-75-214) Avail: NTIS CSCL 05/1

This research is intended to establish a numerical technique to aid in the evaluation of potential research and development contractors. The Delphi Technique is presented as a method for assigning weights to certain critical factors that must be considered prior to making a source selection. A complete procedure for applying the method is given along with sensitivity and significance tests for evaluating results.

GRA

**N75-31931\*** Army Aviation Systems Command, St. Louis, Mo. **A GUIDE FOR PROTOTYPE QUANTITY SELECTION Final Report**

John I. Hansen May 1975 49 p refs  
 (AD-A009771; USAAVSCOM-TR-75-8) Avail: NTIS CSCL 05/1

The purpose of the study was to develop an objective, quantified guideline to assist a decision maker in determining the appropriate number of prototypes that he should have to accomplish the testing program. Tables and graphs were constructed by using the concepts of the Binomial Probability Distribution. Case examples are also included to explain actual program application. It was found reasonable to use the Binomial model for a majority of prototyping applications.

GRA

**N75-31932\*** Naval Postgraduate School, Monterey, Calif. **AN ANALYSIS OF OD TECHNOLOGY IN THE US NAVY: A CASE STUDY M.S. Thesis**

Thomas J. Colavito Mar. 1975 166 p refs  
 (AD-A009905) Avail: NTIS CSCL 05/1

The U.S. Navy has recently institutionalized procedures for conducting organization development interventions within the operating forces. This effort is being executed by Human Resource Management Centers and Detachments (HRMC/D). The technology employed by the HRMC/D is explored in a case study of an intervention into a surface combatant. The case is analyzed and compared with conventional literature in the field. The comparison reveals that a greater emphasis is required by the Navy in achieving the necessary collaborative relationship between the client and the consultant. Recommendations for improving this deficiency and other aspects of the technology are proposed.

GRA

**N75-31956# Committee on Public Works (U. S. Senate).  
THE NEED FOR A NATIONAL MATERIALS POLICY,  
PART 3**

Washington GPO 1974 992 p refs Hearings on S. 3560, S. 3549, S. 1086, S. 3277, and S. 3954 before Panel on Materials Policy of Subcomm. on Environ. Pollution of Comm. on Public Works, 93d Congr., 2d Sess., 17-18 Jul. 1974 (GPO-40-687) Avail: Subcomm. on Environ. Pollution

Testimony is given by the private sector on recommendations for solid waste disposal and utilization legislation. Factors discussed include: materials recovery, marketing of by-products; recycling, hazardous wastes disposal, and increased use of recovered materials by the Federal government. J.M.S.

**N75-31957# Committee of Conference (U. S. Congress).  
SPECIAL ENERGY RESEARCH AND DEVELOPMENT  
APPROPRIATION ACT, 1975**

Washington GPO 30 Jun. 1974 5 p H. R. 14434 enacted into law by the 93d Congr., 30 Jun. 1974 (Pub-Law-93-322; GPO-38-139) Avail: US Capitol, House Document Room

An act making appropriations for energy research and development activities of certain departments, independent executive agencies, bureaus, offices, and commissions for the fiscal year ending June 30, 1975, and for other purposes is described.

Author

**N75-31963# Department of Transportation, Washington, D.C.  
Office of Consumer Affairs.**

**THE VOICE OF THE TRANSPORTATION CONSUMER: A  
REPORT TO THE SECRETARY OF TRANSPORTATION ON  
NATIONWIDE CONSUMER PUBLIC HEARINGS CONDUCTED  
BY THE OFFICE OF CONSUMER AFFAIRS, 1971 -  
1974. EXECUTIVE SUMMARY Final Report**

Apr. 1975 116 p (PB-241764/0; DOT/TES/OCA-75/1) Avail: NTIS HC \$5.25; also available \$19.00/set of 2 reports as PB-241778-SET CSCL 05A

The Executive Summary includes the background and objectives of the 54 nationwide transportation consumer public hearings held 1971-1974, an overview of the findings, and a summary of transportation concerns identified at the hearings. Subject areas include: balanced transportation; transportation planning; transportation funding; citizen participation in transportation planning; elderly and handicapped; energy; environment; rural transportation; technology; automobile; aviation; bicycles;

**N75-32083# Federal Aviation Administration, Washington, D.C.  
ENGINEERING AND DEVELOPMENT PROGRAM PLAN;  
PROGRAM STRUCTURE AND OBJECTIVES**

Jul. 1975 43 p (AD-A013351/2; FAA-ED-00-C; AEM-1) Avail: NTIS HC \$3.75 CSCL 01/2

Program plans covering the present twenty-one engineering and development programs within the Federal Aviation Administration are discussed. The plans were required to provide more detailed information on the objectives, goals, program structure, technical approach, resources, possible implementation, and a number of other aspects for each of these programs. The planning process was formalized in order to provide a record of the status and availability of each plan. An introductory background to the planning process is presented and the objectives in each of the program areas, and an index of the plans are treated. Author

**N75-32137# Transportation Research Board, Washington, D.C.  
AIR TRAVEL AND AVIATION FACILITIES PLANNING**

1975 44 p refs (PB-241929/9; TRB/TRR-529; ISBN-0-309-02376-9) Avail: NTIS HC \$3.75 CSCL 01B

The papers presented examine various aspects of air transportation planning. They include a discussion of a development of a comprehensive assessment report for a regional airport-industrial complex; a study of the development and use of a demand model of domestic trunk air travel between New York City and other large cities; a description of a key implementation tool for financial planning applied to a major expansion of the metropolitan airport system in Louisville, Kentucky--a financial model that includes detailed forecasts with regional and national economic assumptions; and a study of a cost-effectiveness model for arriving at the best alternative or combination of alternatives for improving airport operations, with particular emphasis on decision changes in the air traffic control (ATC) system in the terminal area.

GRA

**N75-32459# Harry Diamond Labs., Adelphi, Md.  
HIGH ENERGY LASER TECHNOLOGY ASSESSMENT.  
VOLUME 2. PROJECT MANAGER'S REPORT - HISTORY  
AND LESSONS LEARNED Final Report, Sep. 1973 - Jan.  
1975**

Edward A. Brown and Joel D. Goldhar Jan. 1975 51 p refs Sponsored by NSF (AD-A010101) Avail: NTIS CSCL 20/5

Volume 2 of the High-Energy Laser Technology Assessment (HELTA) will address itself to the questions how and why the TA was carried out, rather than to the actual impacts of high-energy lasers. The intent is to provide reference material for a future member of the Army staff to use when called upon to perform a TA. The need for the Army to become acquainted with the principles of TA was perceived about two years ago, when Congress passed the Technology Assessment Act of 1972 and created the Office of Technology Assessment. Having neither experience nor expertise in the field, the decision was made to gain both by simply doing a TA, looking at it critically, evaluating mistakes and successes, and then setting down a record by which future technology assessment project managers might be guided. This volume is that record.

**N75-32943\*# National Aeronautics and Space Administration.  
Marshall Space Flight Center, Huntsville, Ala.**

**THE 1975 NASA/ASEE SUMMER FACULTY FELLOWSHIP  
RESEARCH PROGRAM Final Administrative Report**

Sep. 1975 65 p refs Prepared jointly with Ala. Univ. and Auburn Univ. (Grant NGT-01-002-080) (NASA-TM-X-72500; BER-199-94) Avail: NTIS HC \$4.25 CSCL 05I

A research program was conducted to further the professional knowledge of qualified engineering and science faculty members, to stimulate an exchange of ideas between participants and NASA engineers and scientists, and to enrich the research activities of the participants' institutions. Abstracts of reports submitted at the end of the program are presented. Topics investigated include

multispectral photography, logic circuits, gravitation theories, information systems, fracture mechanics, holographic interferometry, surface acoustic wave technology, ion beams in the upper atmosphere, and hybrid microcircuits. M.J.S.

**N75-32944#** Army Foreign Science and Technology Center, Charlottesville, Va.

**CERTAIN ORGANIZATIONAL PROBLEMS IN THE MANAGEMENT OF RESEARCH AND DEVELOPMENT PROJECTS IN AN INDUSTRY SCIENTIFIC RESEARCH INSTITUTE**  
B. I. Gofman 27 Aug. 1974 12 p refs Transl. into ENGLISH from Naukoved. i Informatika Resp. Mezhved. Sb. (USSR), issue 5, 1972 p 86-89  
(AD-A000998; FSTC-HT-23-0218-74) Avail: NTIS CSCL 05/1

The author discusses the use of standard network model in the planning of scientific research projects, experimental design projects and other research and development work in the semiconductor industry. The incorporation of standards network models in serial production planning reduced the duration of the development-production cycle by 30%, shortened production deadlines and also contributed to substantial savings in manpower and time. GRA

**N75-32945#** Illinois Univ., Urbana.

**A MULTI-FACETED COMPUTER-BASED COURSE MANAGEMENT SYSTEM** Subproject Report, 1 Jan. - 1 Nov. 1974

T. H. Anderson, B. R. Dalgaard, D. W. Paden, J. R. Surber, and H. R. Smock Apr. 1975 20 p refs  
(Contract N61339-73-C-0078)

(AD-A010120; DPRDC-TR-75-30) Avail: NTIS CSCL 05/9

The Course-Management System was designed to integrate books, computers and live teachers in an effective manner for courses with large numbers of students and instructors. The logistic problems associated with multifaceted instructional programs were solved, in part, by using PLATO--a computer-assisted instruction system centered at the University of Illinois. Students in the computer-managed course acquire basic information and concepts from individual reading. Their attention to the material is maintained and their progress monitored by a previously developed Computer-Assisted Instruction Study-Management System. Lectures and standard quiz sections are little used. The time of instructors is invested in remediation for students having trouble mastering the core curriculum and in teaching seminars. The role of the computer is to manage study behavior, administer on-line achievement tests, and schedule group tutorial and seminar sessions. GRA

**N75-32960#** Comptroller General of the United States, Washington, D.C.

**TECHNOLOGY TRANSFER AND INNOVATION CAN HELP CITIES IDENTIFY PROBLEMS AND SOLUTIONS** Report to the Congress  
6 Aug. 1975 65 p  
(PSAD-75-110) Avail: NTIS; General Accounting Office Distribution Section P. O. Box 1020 Washington, D. C. 20013 HC \$1.00 CSCL 05B

The California Four Cities Program designed to determine if aerospace technology could be used to help solve cities' problems is described with emphasis on program accomplishments and barriers to technology transfer. It is concluded that aerospace technology is a valuable tool in solving the various problems of cities, but social, political, and economic factors may prevent or delay applying technological solutions. J.M.S.

**N75-32961#** Department of Transportation, Washington, D.C.  
Office of Consumer Affairs.

**THE VOICE OF THE TRANSPORTATION CONSUMER: A REPORT TO THE SECRETARY OF TRANSPORTATION ON NATIONWIDE CONSUMER PUBLIC HEARINGS CONDUCTED BY THE OFFICE OF CONSUMER AFFAIRS, 1971 - 1974**

**Final Report**

Apr. 1975 665 p

(PB-241765/7; DOT/TES/OCA-75/2) Avail: NTIS HC \$15.25; also available \$19.00/set of 2 reports as PB-241778-SET CSCL 05A

The report includes an analysis of transportation concerns expressed by participants at 54 nationwide public hearings held from 1971-1974. Also included is a tabulation of responses to 1,280, 29-part questionnaires returned by hearing attendees. Subject areas include: balanced transportation; transportation planning; transportation funding; citizen participation in transportation planning; elderly and handicapped; energy; environment; rural transportation; technology; automobile; aviation; bicycles; bus; highways; motorcycles; pedestrians; rail; rapid transit; trucks, and water transportation. GRA

**N75-32962#** Northwestern Univ., Evanston, Ill. Dept. of Industrial Engineering and Management Sciences.

**RESEARCH PRIORITIES ON TECHNOLOGY TRANSFER TO DEVELOPING COUNTRIES, VOLUME 1** Final Report

Albert H. Rubenstein, Theodore W. Schlie, and Alok K. Chakrabarti  
Jan. 1974 118 p refs  
(Grant NSF GI-39239)  
(PB-242314/3; NSF/RA/X-74-007-Vol-1) Avail: NTIS HC \$5.25 CSCL 05A

The report contains the results of two NU/NSF workshops held at Northwestern University, May 1973, and Washington, D.C., September 1973, to identify important, researchable questions in the area of technology transfer to developing countries, and to set priorities among them. A list of questions was produced along with a recommended approach to doing research in the technology transfer field. Brief papers by researchers on various aspects of technology transfer and developing nations are included. GRA

**N75-32963#** Northwestern Univ., Evanston, Ill. Dept. of Industrial Engineering and Management Sciences.

**RESEARCH PRIORITIES ON TECHNOLOGY TRANSFER TO DEVELOPING COUNTRIES, VOLUME 2. SURVEY OF SELECTED STUDIES AND RESEARCH ON TECHNOLOGY TRANSFER TO DEVELOPING COUNTRIES**

Nancy Beach Jul. 1974 63 p refs Revised  
(Grant NSF GI-39239)  
(PB-242315/0; NSF/RA/X-74-041-Vol-2) Avail: NTIS HC \$4.25 CSCL 05A

This literature and research survey and bibliography (260 entries) was prepared for use at two NU/NSF workshops on technology transfer to developing countries. It has been amended to take into account several suggestions made by workshop participants. GRA

**N75-32997#** National Aeronautics and Space Administration, Washington, D.C.

**SIGNIFICANT NASA INVENTIONS: AVAILABLE FOR LICENSING IN FOREIGN COUNTRIES**

1975 106 p  
(NASA-SP-7038(03)) Avail: NTIS; SOD HC \$1.40 CSCL 05B

Abstracts are given of various NASA-owned inventions which are available for foreign licensing in the identified countries in accordance with the NASA Foreign Patent Licensing Regulations.

Author

**N75-33024#** Lincoln Lab., Mass. Inst. of Tech., Lexington.  
**NETWORK MANAGEMENT**

H. F. Vandevenne 16 May 1975 102 p refs

(Contract DOT-FA72WAI-261; FAA Proj. 034-241-012)  
(AD-A012398/4; ATC-45; FAA-RD-75-8) Avail: NTIS HC \$5.25 CSCL 17/7

The design of the discrete address beacon system network management function is presented. Network management is responsible for the interaction between the local sensor and the adjacent connected sensors. Based on a dynamic interpretation of the coverage map and the status of the network, network management determines (1) the coverage responsibility of the local sensor, (2) which other sensors are covering the same area, and (3) which of the sensors has principal data link responsibility. Interaction is effected through message exchange over ground communication links connecting the DABS sensors.

Author

**N75-33042# RAND Corp., Santa Monica, Calif.**

**IDEAS FOR USAF RPV DEVELOPMENT (A TRANSCRIPT OF AN INFORMAL TALK)**

W. B. Graham Jul. 1974 11 p

(AD-A010979; P-5329) Avail: NTIS CSCL 01/3

Suggested is a philosophy of RPV development, leading to a plan of action: build some very simple, cheap systems, test them and learn from the tests. Then go on to build some other types, extending their range or whatever performance measure seems to be most important based on the tests of the earlier RPVs.

GRA

**N75-33075# Army Construction Engineering Research Lab., Champaign, Ill. Engineering Research Lab.**

**THE STATUS OF DEVELOPMENT OF A MAINTENANCE MANAGEMENT SYSTEM FOR AIRFIELD PAVEMENTS Final Report, Jul. 1971 - Jun. 1974**

P. F. McManus May 1975 76 p refs  
(Contract F29601-71-X-0002)

(AD-A011589; AFWL-TR-74-15423) Avail: NTIS

The objective of the project is to develop methodology for determining cost-effective plans for preventive maintenance of airfield pavements so that functional requirements are met with a minimum of major repair and reconstruction effort. The approach for meeting these objectives is to create a computerized Maintenance Management System which will predict maintenance requirements, analyze alternative schedules of maintenance activities and determine cost-effective schedules, monitor actual pavement performance, and provide reports on the performance and cost of pavement facilities to all levels of command. At present, two computer codes are available, PREDICT and PAVER, which have been developed for this project and concurrent projects sponsored by the U.S. Army Corps of Engineers. These programs are recommended for use in test implementations at Air Force bases.

GRA

**N75-33090# Ball Bros. Research Corp., Boulder, Colo.**

**AEROSPACE LUBRICATION TECHNOLOGY TRANSFER TO INDUSTRIAL APPLICATIONS**

Thomas J. Loran and Bill Perrin *In NASA. Kennedy Space Center 9th Aerospace Mech. Symp. 1974* 14 p

**CSCL 11H**

Difficulties encountered in entering industrial markets with an aerospace lubrication and coating technology are discussed along with the technical, financial, and managerial solutions that evolved.

Author

**N75-33540# Swedish Council for Building Research, Stockholm. RESEARCH ON MAN AND HIS ENVIRONMENT; PROBLEMS DISCUSSION**

1975 80 p

(PB-242451/3; ISBN-91-540-2343-2; Programme-19b) Avail: NTIS HC \$4.75 CSCL 13M

The field of environmental research is analyzed from the points of view of content and organization. It is suggested that the effort be devoted to problem areas which are essential to planning, production, and construction in the light of the needs, requirements, and preferences of users.

GRA

**N75-33541# Gulf South Research Inst., Baton Rouge, La. STATE USE OF FEDERAL TECHNICAL RESOURCES. REPORT OF A STUDY OF FEDERAL RESOURCES, MECHANISMS, AND BARRIERS REGARDING PROVIDING TECHNICAL ASSISTANCE TO THE STATES OF LOUISIANA AND MISSISSIPPI**

Jackson M. Balch, Roger D. Rowland, and Kenneth C. Wagner 5 Apr. 1974 88 p Prepared in cooperation with Mississippi Res. and Develop. Center Sponsored by NSF (PB-242460/4; NSF/RA/R-74-043) Avail: NTIS HC \$4.75 CSCL 13B

Results are given of a study undertaken to determine if, from the states' point of view, there exists a need to establish a mechanism that would enable the states to take advantage of technology existing within the Federal structure. Ways in which existing Federal technology and technical assistance capabilities might be brought to bear on state problems, on terms acceptable to the states are identified. Interviews were held with key individuals in the major agencies of the states of Louisiana and Mississippi, and two workshops were conducted to provide a forum for participants from both the states and the Federal Government to mutually seek innovative improvements in the technology transfer process.

GRA

**N75-33704\* Tufts Univ., Medford, Mass.**

**VERBAL WORKLOAD IN DISTRIBUTED AIR TRAFFIC MANAGEMENT**

J. G. Kreifeldt, B. Pardo (Calif. State Univ.), T. E. Wempe (NASA. Ames Res. Center), and E. Huff (NASA. Ames Res. Center) *In NASA. Ames Res. Center 11th Ann. Conf. on Manual Control May 1975* p 455-471 refs

(Grants NGR-05-046-002; NCAR-785-401)

CSCL 17B

The effects of alternative traffic management possibilities on task performance and pilot controller verbal workloads were studied. Two new rule structures - sequencing and advisory - in addition to vectoring were studied in conjunction with CRT pilot displays incorporating traffic situation displays with and without aircraft flight path predictors. The sequencing and advisory systems gave increasing control responsibility to the pilots. It was concluded that distributed management systems could in practice significantly reduce controller verbal workload without reducing system performance. Implications of this conclusion suggest that distributed management would allow controllers to handle a larger volume of traffic safely either as a normal operating procedure or as a failure mode alternative in a highly automated ground centered system.

Author

**N75-33707\* Tufts Univ., Medford, Mass. Dept. of Engineering Design.**

**SUBJECTIVE EVALUATION WITH FAA CRITERIA: A MULTIDIMENSIONAL SCALING APPROACH**

J. G. Kreifeldt, L. Parkin, T. E. Wempe (NASA. Ames Res. Center), and E. F. Huff (NASA. Ames Res. Center) *In NASA. Ames Res. Center 11th Ann. Conf. on Manual Control May 1975* p 504-525 refs  
(Grant NCAR-785-401)

CSCL 05E

Perceived orderliness in the ground tracks of five A/C during their simulated flights was studied. Dynamically developing ground tracks for five A/C from 21 separate runs were reproduced from computer storage and displayed on CRTS to professional pilots and controllers for their evaluations and preferences under several criteria. The ground tracks were developed in 20 seconds as opposed to the 5 minutes of simulated flight using speedup techniques for display. Metric and nonmetric multidimensional scaling techniques are being used to analyze the subjective responses in an effort to: (1) determine the meaningfulness of basing decisions on such complex subjective criteria; (2) compare pilot/controller perceptual spaces; (3) determine the dimensionality of the subjects' perceptual spaces; and thereby (4) determine objective measures suitable for comparing alternative traffic management simulations.

Author

**N75-33804#** Carnegie-Mellon Univ., Pittsburgh, Pa. Management Sciences Research Group.

**DISCOUNTING, ERGODICITY, AND CONVERGENCE FOR MARKOV DECISION PROCESSES**

Thomas E. Morton and William E. Wecker Jan. 1975 46 p refs Sponsored in part by ONR Prepared in cooperation with Chicago Univ.

(AD-A009264; RR-357; WP-20-74-75) Avail: NTIS CSCL 12/2

It was shown that, for the stationary finite state space compact action space Markov decision problem, the relative cost function converges as the product (alpha times lambda) to the power n, where alpha is the discount rate and lambda is between 0 and 1; it was also demonstrated that lambda equals the argument of the subdominant eigenvalue of the optimal infinite horizon policy. Easily obtained bounds for lambda are also given. Under certain additional restrictions policy convergence is shown to be of the same order as relative cost convergence. The same result gives convergence properties for the undiscounted problem and for the case alpha larger than 1. It is further shown that convergence is not in general faster than geometric with the factor alpha times lambda. The methodology seems applicable to the compact state space case. Y.J.A.

**N75-33892#** Joint Publications Research Service, Arlington, Va.

**RESEARCH AND DEVELOPMENT PLANNING**

3 Feb. 1975 23 p refs Transl. into ENGLISH from unidentified Russian report

(JPRS-64010) Avail: NTIS HC \$3.25

Data are presented on organizing the development and implementation of large-scale interbranch scientific-technical programs, and the selection of preferential variants of a draft plan for a complex system.

**N75-33893** Joint Publications Research Service, Arlington, Va.  
**ORGANIZING THE DEVELOPMENT AND IMPLEMENTATION OF LARGE-SCALE INTERBRANCH SCIENTIFIC TECHNICAL PROGRAMS**

K. A. Yefimov *In its Res. and Develop. Planning* (JPRS-64010)  
3 Feb. 1975 p 1-10 Transl. into ENGLISH from unidentified Russian report

For the development of interbranch programs for the advancement of technology, it is considered necessary to forecast the basic trends in science and technology. Coordination plans, and the indices of economic effectiveness are discussed. F.O.S.

**N75-33898#** Data Resources, Inc., Lexington, Mass.

**FEDERALLY SUPPORTED MATHEMATICAL MODELS: VOLUME 3: TECHNICAL APPENDICES** Final Report

Gary Fromm, William L. Hamilton, and Diane E. Hamilton Jun. 1974 369 p Prepared in cooperation with ABT Assoc., Inc., Cambridge, Mass. 3 Vol.

(Contract NSF-C-804)

(PB-241564/4; NSF/RA/S-74-030-Vol-3) Avail: NTIS HC \$10.00; also available in a set of 3 reports as PB-241561-SET HC \$18.00 CSCL 05A

The appendices to the study are presented: the project director questionnaire; the agency monitor questionnaire; and the tables compiled for the study. GRA

**N75-33899#** Connecticut Univ., Storrs. Inst. of Materials Science.

**PROPOSAL FOR AN EXPERIMENT ON PROVIDING INCENTIVES FOR INDUSTRY-UNIVERSITY RESEARCH COLLABORATION** Final Report

Leonid V. Azaroff Jun. 1974 85 p  
(Grant NSF DI-39492)

(PB-242329/1; NSF/RA/R-74-001) Avail: NTIS HC \$4.75 CSCL 05A

A potential experiment in cooperative research involving a university and an industry, is described whereby limited government cost-sharing is used as an incentive for establishing a

long term cooperative program. The steps taken in attempting to establish the cooperative program with industrial organizations specifically inclined to exploit plastic materials are included. Barriers encountered, steps taken to overcome barriers, and conditions necessary to induce industrial participation in the program are outlined.

GRA

**N75-33901#** Michigan Univ., Ann Arbor. Inst. for Social Research.

**CHARACTERISTICS OF SUCCESSFUL AND UNSUCCESSFUL ORGANIZATIONAL DEVELOPMENT**

Jerome L Franklin Mar. 1975 75 p refs  
(Contract N00014-67-A-0180-0013; NR Proj. 170-719)  
(AD-A006912) Avail: NTIS CSCL 05/1

Several characteristics of organizations, their environments, and development efforts are evaluated to determine their association with successful and unsuccessful change in 25 organizations. Four groups of characteristics differentiating between successful and unsuccessful change efforts indicate: (1) commitment to and use of survey feedback and interpersonal process consultation interventions are associated most closely with success in OD efforts while an emphasis on sensitivity training/T-groups is most closely associated with the unsuccessful organizations; (2) organizations that are more stable and staid are less likely to be successful in their OD efforts than are those which are expanding and more open to and involved in adjusting to change; (3) internal resource persons who are less carefully selected, receive change-agent training previous to the OD effort, and do not possess assessment-prescriptive skills are found in the unsuccessful organizations; and (4) more specific interests and greater commitment to the OD efforts are associated with successful change.

GRA

**N75-33902#** Army War Coll., Carlisle Barracks, Pa.

**BETTER CONTROL IS NEEDED**

Richard W. Ceyll 28 Jan. 1975 19 p refs  
(AD-A009948) Avail: NTIS CSCL 05/1

The basic question of 'What is control' is discussed as it applies in any management situation in general and as it may be applied in management in the Army today. Control is the essential element which ties the management functions together with a system. The relatively new decision sciences of systems analysis and cybernetics are discussed in relation as to how they may be applied by the Commander in his day-to-day decision-making. Feedback theory is shown to be an essential part of controlling. Performance indicators are too often used by the Commander alone to tell him what is wrong with a unit. A control system for any organization must be well planned and the Commander must take a systematic approach to management control if he expects to gain his objectives. GRA

**N75-33903#** Mentoris Co., Sacramento, Calif.

**EXPERIMENTAL DEFINITION PHASE FOR MARKETING THE NASA AUTOMATED ATTENDANCE MANAGEMENT SYSTEM** Final Report

Ewart E. Smith, W. J. Schimandle, and Elmer Dewey Hill Sep. 1974 43 p ref  
(Grant NSF DI-42350)

(PB-242185/7; NSF/RA/R-74-048) Avail: NTIS HC \$3.75 CSCL 05A

This report is part of a larger effort to explore how best to transfer technology which originated in Federal laboratories to the civilian/commercial sector. A transfer was conducted according to a semistructured work statement which emphasized the early establishment of formal linkages, the negotiations of commitments of substance, and the development of a technology transfer plan by all necessary participants for a successful transaction. The transfer of an automated attendance management system to public school districts in California is discussed.

GRA

**N75-33904# American Society of Civil Engineers, New York.  
REPORTS ON THE DEVELOPMENT OF A PROGRAM PLAN  
FOR AN EXPERIMENTAL R/D INCENTIVES PROGRAM IN  
THE CONSTRUCTION INDUSTRY. PART 1: SUMMARY  
REPORT ON PROGRESS. PART 2: PROGRAM DESCRIPTI-**

**ON Final Report**

Donald C. Taylor Jun. 1974 38 p refs

(Grant NSF DI-39521)

(PB-242227/7; NSF/RA/R-74-050-Pt-1;

NSF/RA/R-74-050-Pt-2) Avail: NTIS HC \$3.75 CSCL 13M

Results are summarized of a study to determine barriers to and incentives for stimulating the support of research and innovation by the construction industry. Objectives developed for a Federal cost-sharing incentive experiment, and how the program would plan to continue after termination of NSF funding are discussed. Interim findings, conclusions, and recommendations were developed which concerned: organizational interest in the experiment; research and innovation within the construction industry; barrier identification; and further funding plans, availability, and commitments. A project description of the potential subject areas and specific experiments proposed is included.

GRA

**N75-33906# RAND Corp., Santa Monica, Calif.**

**INTERDISCIPLINARY POLICY RESEARCH IN IN-  
DEPENDENT RESEARCH CENTERS**

Walter S. Baer Jan. 1975 19 p refs Presented at Ann. Meeting of Am. Assoc. for the Advancement of Sci., New York, 29 Jan. 1975 Sponsored in part by the John and Mary R. Markle Foundation

(AD-A010961; P-5347) Avail: NTIS CSCL 05/1

Interdisciplinary research is discussed with regard to policy research, not basic research in the physical or social sciences.

GRA

**N75-33921# Peat, Marwick, Mitchell and Co., Washington, D.C.  
R AND D INCENTIVES STUDY. VOLUME 1: PROJECT  
Final Report**

Allan Taub Apr. 1974 85 p

(Contract NSF C-825)

(PB-242254/1; NSF/RA/R-74-013-A-Vol-1) Avail: NTIS HC \$4.75 CSCL 05C

The effects are investigated of federal tax policies on private investments in research and development. The advantages of providing incentives through alternative policies were examined. Six tax policies were developed and six candidate industries were selected on which to test their effects. The concept and design of an experimental program within which the alternative tax policies might be tested are described.

GRA

**N75-33922# Peat, Marwick, Mitchell and Co., Washington, D.C.  
R AND D INCENTIVES STUDY. VOLUME 2: EXPERIMENTAL PROGRAM CONCEPT AND DESIGN Final Report**

Allan Taub Apr. 1974 50 p refs

(Contract NSF C-825)

(PB-242255/8; NSF/RA/R-74-013-B-Vol-2) Avail: NTIS HC \$3.75 CSCL 05C

For abstract, see N75-33921.

**N75-33924# Defense Documentation Center, Alexandria, Va.  
COST EFFECTIVENESS ANALYSIS Report Bibliography, Jul.  
1973 - Dec. 1974**

May 1975 329 p refs

(AD-A010400; DDC-TAS-75) Avail: NTIS CSCL 14/1

Cost effectiveness in this bibliography relates to program evaluations, management techniques and problems, research and development, decision making, design tradeoffs, related cost analysis and methodology, and systems value engineering. This bibliography represents a collection of unclassified-unlimited citations in the Defense Documentation Center's data bank that have been cataloged since June 1973. Four computer-generated indexes of Corporate Author-Monitoring Agency, Subject, Title, and Personal Author are provided.

GRA

**N75-33927# Assistant Secretary of Defense (Installations and Logistics), Washington, D.C.**

**GUIDE FOR MONITORING CONTRACTORS' INDIRECT COST**

3 Jul. 1974 102 p

(AD-A009951) Avail: NTIS CSCL 05/1

This Guide is directed toward better control of the indirect costs, or overhead, particularly in those plants which perform major Government contracts. It does not relieve contractor management of its traditional responsibility to manage and control. It does point out what the Government expects of contractor management and how the Government would monitor their efforts. Effective control of indirect costs involves tests of reasonableness, allowability, and allocability. Of these, the tests of reasonableness relates both to the reasonableness of the dollar amount of a cost and to the reasonableness of the contractor's action in incurring the cost. It is essential that those tests be vigorously applied to all costs, including indirect costs which account for a very large portion of the procurement dollars.

GRA

**N75-33935# Leibowitz (Arnold H.), Washington, D.C.**

**GOVERNMENT POLICY AND INNOVATION: THE SMALL BUSINESS ADMINISTRATION EXPERIENCE Final Report**

Arnold Leibowitz Dec. 1974 94 p refs

(Grant NSF DI-40778)

(PB-242337/4; NSF/RA/R-74-065) Avail: NTIS HC \$4.75 CSCL 05C

The development of the SBA from its beginnings in 1953 to the present is reviewed with a special emphasis on its support of technological innovation. Such support has included: (1) financial assistance in the form of direct loans, guaranteed loans, and indirect loan assistance through small business investment corporations; (2) efforts to assist small research and development firms in obtaining government contracts; and (3) a technological information program, begun in 1968, concerning developments in research and development. These activities are evaluated in detail and specific recommendations are made for further studies.

GRA

**N75-33944# American Public Works Association, Chicago, Ill.  
DYNAMIC TECHNOLOGY TRANSFER AND UTILIZATION:  
THE KEY TO PROGRESSIVE PUBLIC WORKS MANAGEMENT Final Report**

Morris M. Cohn and M. J. Manning Nov. 1974 88 p refs

(Contract NSF DI-38422)

(PB-242193/1; APWA-1974; NSF/RA/R-74-031) Avail: NTIS HC \$4.75 CSCL 05A

New roles are proposed for professional public works associations and for APWA in particular within the technology transfer processes of research, development, production, dissemination, and application. The thrust of these roles is to assure satisfactory monitoring, evaluation, and assistance to help identify and satisfy technology needs in the public works field.

GRA

**N75-33945# Arizona Univ., Tucson. Dept. of Electrical  
Engineering.**

**APPLICATION OF SPECIFIC MILITARY/SPACE DEVELOPMENT  
TO THE PUBLIC SECTOR Annual Report**

Stuart A. Hoeing Jun. 1974 66 p refs

(Grant NSF DI-039554)

(PB-242330/9; NAS/RA/R-74-030) Avail: NTIS HC \$4.25 CSCL 14B

This interim report describes a potential experiment in cooperative research involving a university and an industry, whereby limited government cost-sharing is used as an incentive for establishing a long term cooperative program. It describes the steps taken by the author in attempting to establish the cooperative program with industrial organizations. Barriers encountered, steps taken to overcome the barriers, and conditions necessary to induce industrial participation in the program are outlined. The research discussed includes monitoring of mine hoist cables, exoelectron technology, electrostatic dust control, and methane production from sewage.

GRA

**N75-33946#** Harbridge House, Inc., Boston, Mass.  
**LEGAL INCENTIVES AND BARRIERS TO UTILIZING TECHNOLOGICAL INNOVATION. REFERENCE EDITION**  
**Final Report**

Richard I. Miller Mar. 1974 203 p refs  
 (Contract NSF C-822)  
 (PB-242194/9; NSF/RA/R-74-004; NSF/RDI-4) Avail: NTIS HC \$7.25 CSCL 05A

The entire body of law which affects the commercial development of technological innovation on its way to the marketplace is examined. The research included in-depth studies of specific court cases, interviews, surveys, reviews of licensing policies and practices, and examinations of trade secret case data in six major industrial states and the FTC. GRA

**N75-33947#** Syracuse Univ. Research Corp., N.Y.  
**FEDERAL LABORATORIES AND TECHNOLOGY TRANSFER: INSTITUTIONS, LINKAGES, AND PROCESSES** Final Report

Albert Teich and W. Henry Lambright Mar. 1974 347 p refs  
 Prepared jointly with the State Univ. of New York, Syracuse  
 (Contract NSF C-832)  
 (PB-242225/1; NSF/RA/R-74-018; NSF/RDI-18) Avail: NTIS HC \$9.50 CSCL 05A

The study placed special emphasis on the nature and development of linkages among the necessary participants involved in the transfer process, and is based on a conceptual model of technology transfer which assumes that there are three basic functions involved: innovation, manufacture, and utilization. The 11 cases studied were a silent communication alarm network, an electrical switchpack, an automated chemical analysis method, slippery water, a rechargeable cardiac pacemaker, an artificial kidney, an automated hospital room, firefighters protective clothing, a microwave landing system, and the synchronous communications satellite. GRA

**N75-33949#** Indiana Univ., Bloomington. School of Public and Environmental Affairs.

**A BACKGROUND STUDY OF TECHNOLOGY UTILIZATION IN THE FIELD OF PUBLIC WORKS. VOLUME 1. SUMMARY**  
**Final Report**

Ralph K. Jones, Martin J. Manning (Am. Public Works Assoc.), and Donald M. Goldbaum Mar. 1974 62 p  
 (Grant NSF DI-38422)  
 (PB-242352/3; NSF/RA/R-74-047) Avail: NTIS HC \$4.25 CSCL 05A

The objective of the study is to identify and analyze the problems faced by public works officials in bringing new or improved technology to bear on their operations, and to develop means by which a major professional association (the APWA) might help to overcome those problems. The problems of technology utilization were found to be systemic in nature, and a long-range action program was recommended to design and test a formal public works technology coordination system. This system would be designed to bridge the gap between existing public works and technology management systems, to provide liaison with other key organizations. GRA

**N75-33950#** Williams (Charles W.), Inc., Alexandria, Va.  
**FEDERAL TECHNICAL ASSISTANCE AND THE NSF RDI PROGRAM** Final Report

Charles W. Williams, Jr. and Thomas H. Givens Jul. 1974 56 p Sponsored by NSF  
 (PB-242384/6; NSF/RA/R-74-036) Avail: NTIS HC \$4.25 CSCL 05A

This report is primarily concerned with the intergovernmental aspects of technical assistance from the federal government, and ways in which federal agencies can improve the innovation process. A brief overview of present federal technical assistance activities is presented along with a conceptual outline for a strategic evaluation of these activities. The present NSF/RDI program and its potential relationships with federal technical assistance are described. Three basic alternatives open to the RDI program to increase the rate of innovation are: adopt a

strategic policy evaluation for federal technical assistance; develop a program of natural experiments around technical assistance; or combine the work of these two alternatives to yield a strategic evaluation/natural experiment program. GRA

**N75-34000** National Research Council of Canada, Ottawa (Ontario). Analysis Lab.

**INTERACTIVE COMPUTER MODELS OF INDUSTRIAL OPERATIONS**

U. Graefe, L. K. Nenonen, and K. Strobel (Hatch, Associates, Toronto, Ontario) In its Quart. Bull. of the Div. of Mech. Eng. and the Natl. Aeron. Estab., 1 Apr. - 30 Jun. 1975 30 Jun. 1975 p 33-43 refs

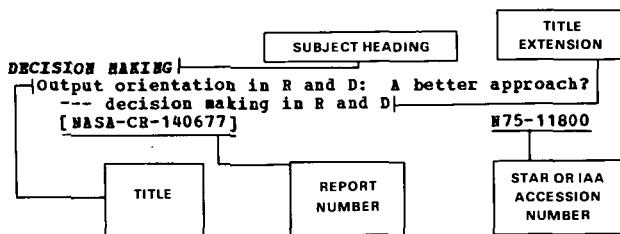
A simulation approach is described which features on-line interaction with the model. This objective is achieved by the adaptation of the GASP discrete event simulation language for use on a hybrid computer, permitting simulation of mixed continuous and discrete processes normally found in industrial complexes. Using a special-purpose display unit, on-line simulation is permitted under operator control. An application of the approach to a copper smelter scheduling study is described briefly with emphasis on the interaction capabilities. Author

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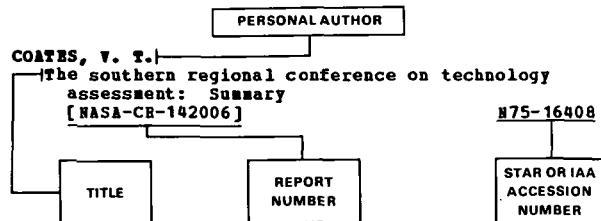
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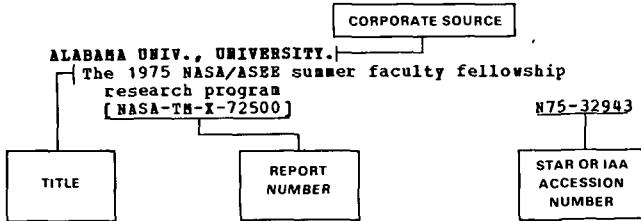
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